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RINGWORM OF HANDS AND FEET*

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Ringworm of the glabrous skin presents well-known characteristics readily recognized by all. The cases described in this paper do not present the ordinary clinical symptoms of ringworm of the body, but are examples of what is ordinarily termed dyshidrosis or eczema of the vesicular-vesiculopustular or intertriginous type. What proportion of these is mycotic will require investigation of a large number of cases by many observers to determine, but it appears to be large.

HISTORICAL

Tilbury Fox[1] was probably the first observer to report a recognized case of trichophyton infection of a volar surface. The diagnosis in his case was simplified by the fact that the lesion began on the dorsal surface of the hand as a typical ringworm, and gradually progressed until it involved the interdigital and palmar surfaces of the fingers. In 1888, Pellizari[2] reported the occurrence of seven cases of infection of the palms and soles in a series of 150 cases of trichophytosis capitis. The first careful and systematic study, however, was not made until 1892. In January of that year, Djélaleddin-Moukhtar,[3] working in Fournier's clinic, presented two cases before the Société de dermatologie. They were of the eczematoid dyshidrotic type, with abundant mycelial threads, and excited much interest and discussion by the société. During that year, four more papers by the same writer appeared. In the last of these[4] he collected reports of twenty-five cases, seventeen of which were personal observations.

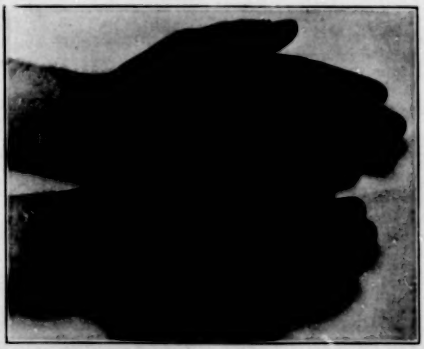

Fig. 1 (Case 1).—Vesicopustular lesions on hands and feet.

In 1908, Whitfield[5] described five cases of ringworm of the hands and feet "indistinguishable from an ordinary outbreak of acute vesicobullous eczema." In 1910, Sabouraud[6] reported six cases of intertriginous eczema of the feet, four of which gave cultures of *Epidermophyton inguinale*, and one case with lesions on the hand. In February, 1911, Whitfield[7] recorded observations in seven additional cases. In November, 1911, Sabouraud presented his observations on the subject at a special meeting of the Dermatological Section of the Royal Society of Medicine. The discussion was opened by Whitfield[8] with a paper in which he classified the clinical types and reported fifteen additional cases. In the general discussion which followed, most of the members present told of having encountered the disorder among their private patients.

Since 1911, the most comprehensive paper on the subject is that of Kaufmann-Wolff.[9] She made a clinical, histologic and mycologic study of twenty-five cases which formerly would have been accepted as dyshidrosis. In America, Montgomery and Culver[10] reported an infection of the feet, following eczema marginatum of the groin, from which *Epidermophyton inguinale* was grown. In 1915 Hartzell[11] reported four cases which he had seen "in the past few years."

In 1916, Lane[12] reported two cases, both of which were in women. One patient had lesions on the plantar surface of the foot, and the other had lesions involving the nails and both dorsal and palmar surfaces of the fingers.

Classification.—Whitfield[8] classified the different manifestations into three types: 1. Acute vesicobul-

* Read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Fox, Tilbury: Brit. Med. Jour., 1870.
2. Pellizari: Gior. ital. d. mal. ven., March, 1888.
3. Djélaleddin-Moukhtar: Ann. de dermat. et de syph., 1892, p. 152.
4. Djélaleddin-Moukhtar: Ann. de dermat. et de syph., 1892, p. 894.
5. Whitfield: Lancet, London, July 25, 1908.
6. Sabouraud: Ann. de dermat. et de syph., 1910, p. 289; Les teignes, Paris, 1910.
7. Whitfield: Brit. Jour. Dermat., 1911, xxiii, 35.
8. Whitfield: Brit. Jour. Dermat., 1911, xxiii, 375.
9. Kaufmann-Wolff: Dermat. Ztschr., 1914, xxi, 385.
10. Montgomery, D. W., and Culver, G. D.: Eczema Marginatum of the Toes, THE JOURNAL A. M. A., April 4, 1914, p. 1076.
11. Hartzell: Am. Jour. Med. Sc., 1915, cxlix, 96.
12. Lane: Boston Med. and Surg. Jour., 1916, clxxiv, p. 271.

lous: Sudden onset, with all the characteristics of a vesicular eczema or dyshidrosis. Pus formation usually absent. No grouping, and no spreading margin. 2. Chronic intertriginous of toes: Secondary to acute vesicular type. Whitened, sodden mass of epithelium between the toes. 3. Chronic hyperkeratotic: Enormous and irregular masses of overgrown horny layer. Usually on the feet; may involve the entire plantar surface. Scattered vesicles and pustules may be found.

Fig. 2 (Case 2).—Chronic keratotic lesions of feet.

Kaufmann-Wolff[9] agrees essentially with Whitfield's classification. She found that her twenty-five cases fell into three groups: 1. Vesicular: Grouped; accompanied by marked itching; mostly occurs in hot weather; sago-grain vesicles. 2. Squamous: Resembles a scaling dyshidrosis, usually with a central primary lesion. Results from confluence of vesicles. 3. Pyodermic: Resulting from secondary infection.

These types are due to variations in location, duration of the lesions, and to seasonal changes. A patient may present one type on one occasion and another (or all three) the next time he is seen.

CLINICAL DESCRIPTION

The essential lesion is probably in all cases a vesicle, which may be solitary or multiple, grouped or widely disseminated. The vesicle is deeply seated, only slightly elevated, and has the appearance of a sago-grain embedded in the epidermis. The content is usually clear, unless secondarily infected, and as a rule there is no erythema surrounding new vesicles. In the course of a few days to a week, the fluid is absorbed, leaving a brownish macule. Eventually, the roof of the dried vesicle becomes torn and desquamation begins, exposing a red, smooth, shiny surface, with a collaret of upturned scales (Case 1).

The subsequent development depends on (1) the number of vesicles and their distribution: and (2) the location of the lesions. A third factor is probably to be added, namely, the type of the invading organism; but as yet we have insufficient mycologic data to include this.

If the vesicles have remained discrete, they may desquamate and leave slightly scaling areas, which have not even attracted the attention of the patient, but which may still harbor the organism long after the subsidence of the vesicle. Instead of desquamating, the roof of the vesicle may produce a yellowish-brown, keratotic button, 1 to 2 mm. in thickness, in which many mycelial threads may be found, and beneath which there may be little or no trace of the usual shiny red surface (Case 9). The hyperkeratoses so frequently observed are probably formed in this manner.

If, however, the vesicles have been grouped, large confluent vesicles, or even bullae, may result. Should such a group occur in a comparatively dry area, as, for example, the center of the palm or sole, or high up on the arch of the foot, desquamation may take place, leaving a circular, fairly well defined, shiny red area denuded of corneous layer (Case 4).

Unmolested, this lesion may heal spontaneously, or new vesicles may continue to form around the entire periphery, with extension in all directions; or they may form only at one point, with extension in one direction.

Irritated with caustics or macerated with moist dressings, the lesion may be transformed into an eczematoid dermatitis or a severe pyodermia. In either case, the finding of the fungus microscopically, or the growth of a pure culture, becomes very difficult.

The location of the lesion determines largely the conditions in which the organism must proliferate, and hence the type of lesion; whether it shall be a relatively flat surface of thin, dry corneum, constantly exposed to the air, such as may be found on the palm of a sedentary person; in a greatly thickened corneum, as that of the heel of a hyperhidrotic foot; or whether it shall be located in the thin, warm, moist, macerated and closely approximated surfaces of the fourth interspace of the foot.

The isolated vesicle on the hand usually exfoliates. In some cases, scaling areas very much like the relics of a mild toxic erythema will be the only evidence of its having existed. The grouped vesicles may develop into a dry or slightly moist, well defined eczematoid area (Case 8).

On the heel, and especially along the outer margin of the plantar surface, marked hyperkeratoses may be developed; and in the midst of these hyperkeratoses solitary vesicles containing the fungi (Cases 2 and 3) may occur. This would seem to indicate that the chronic keratotic type is the result of repeated vesication in a thickly cornified area, which is not subject to maceration.

Of all the cases under observation, the interdigital surfaces of the fourth interspace of the toes is the

Fig. 3 (Case 3).—Chronic dyshidrotic type.

region most commonly affected, as was pointed out by Sabouraud,[13] who maintained that a cutaneous fold is always the point of origin of the lesions induced by *Epidermophyton inguinale* or *plicarum*. He says:

All the interdigital folds become involved, but those of the fourth and fifth toes to the greatest degree. In the depth of the fold is a sort of caseous magma, white and easily lifted. Beneath this, the epidermis is white, brilliant, moist, macerated and thickened; scraping removes large plaques, which resemble a sort of adherent false membrane. As one passes from the fold, the lesion becomes more definitely vesicular, but the

13. Sabouraud: Ann. de dermat. et de syph., 1910, p. 291.

vesicles are few in number and in different stages of evolution.

Infrequently, the process extends backward on the plantar surface of the foot as a fairly well defined area of desquamation (Case 4), or merely a slight scaling may be present. As a rule, however, the changes are limited to the interdigital surfaces of the fourth interspace and to the plantar surfaces of the fourth and fifth toes. At the base of the fifth toe, a superficial fissure, which is partly interdigital and partly plantar,

Fig. 4 (Case 4).—Grouped vesicles on left sole.

is commonly met. In some cases a similar fissure is seen in the flexor folds of all the toes.

In seeking material for examination, this caseous magma and the white, sodden epithelium should be discarded. Although the organisms are usually to be found in it, nevertheless frequent disappointment will occur and a failure to establish the diagnosis result if it be depended on. The superficial scales should be removed with the curet down to the point where the squames become pinkish and are attached rather firmly, with perhaps but one loose margin.

The reason for the localization of the disorder in the fourth interspace of the foot is that the shoe causes the fifth toe to be in a constant state of flexion and adduction. Eventually, the last two toes become so molded, one against the other, that it is difficult to separate them and renders proper cleansing difficult. Hence, as time goes on, the exfoliated epidermis, instead of being daily removed, remains and becomes macerated in this warm, moist pocket. This offers ideal conditions for the growth of *Epidermophyton inguinale*

That the invading organism, which in most foot cases is *Epidermophyton inguinale*, prefers a moist, warm place, is shown by the fact that (1) both this disorder and eczema marginatum are common in the tropics, and that they heal when the patient goes to a high and dry climate and recur when he returns,[14] (2) the folds (axillary, mammary, inguinocrural and scrotocrural) are the points of origin of eczema marginatum, and (3) hyperhidrosis is frequently present in infected hands and feet. Furthermore, Fischer[15] has reported an interesting epidemic, consisting of ten cases, occuring in hospitalized pulmonary patients who had had hot applications to various areas about the chest. The regions so treated developed vesicular eruptions, which at first were thought to be due to the heat applied, but which were subsequently found to be infections due to *Epidermophyton inguinale*.

ANALYSIS OF CASES

The group of cases forming the basis of this report consists of sixty-five patients seen in the ordinary routine of private practice. Of this group, fifty-four were male and eleven were female, a preponderance of male over female 5 to 1. This high ratio may be merely an accidental one in a group too small to admit of generalization, or it may be due to the recognized fact that eczema marginatum occurs more frequently in men than in women. Pringle[16] saw an epidemic of eczema marginatum in which seven men were affected out of twenty in an institution housing forty, half of whom were women. In another institution, he saw twenty men infected without a single infection in a female. In our series, only eleven cases, one of which was in a female, gave a history of having had eczema marginatum; two had eczema marginatum coexisting, and one was followed by eczema marginatum while under observation. Two women described typical eczema marginatum occurring in their husbands in past years. This small number of eczema marginatum cases in our series would be insufficient to account for the high ratio of men to women. Moreover, the group of twenty-five cases of Djélaleddin-Moukhtar included fifteen women and only ten men. In a series of thirty-five cases of eczema marginatum, composed of twenty-nine men and six women, with lesions on various regions of the body, Nicolau[17] observed only four cases in which the feet were simultaneously involved. In two other cases, only the feet were affected, and one of these, a woman, developed a lesion in the groin two years later.

Familial transmission was observed in seven families. In two of these, eczema marginatum of the groin and infection of the feet were observed in both father and son. In two families, eczema marginatum had occurred previously, followed by infection of hands or feet (or both) of wife and husband. In two families, the husband had been treated years ago by Dr. Hyde for "dyshidrosis" of hands and feet, and recently both husbands and wives have been found to have both

Fig. 5 (Case 5).—Severe intertriginous type, with extension to plantar surfaces.

feet infected. In one family, the daughter was treated in 1915 for an infection of the feet continuing two months. In April, 1916, her father was seen with the same condition, which had been present "many years." One woman, with both feet infected, gives a good description of an attack of eczema marginatum occurring several years ago in her husband.

The age of the patients varied from 9 to 54 years. The duration ranged from 1 week to 20 years. In

14. Castellani: Arch. f. Dermat. u. Syph., 1908, xciii, 23.
15. Fischer: Berl. klin. Wchnschr., 1915, No. 10, p. 24.
16. Pringle: Brit. Jour. Dermat., 1911, xxiii, 394.
17. Nicolau: Ann. de dermat. et de syph., 1913, p. 65.

three cases, the condition had existed from three to six weeks; in nine less than ten months; in twenty-six more than one year; in eighteen more than two years, and in seven more than ten years.

Plotting the seasonal variation in the number of cases shows the maximum to have occurred in September, with May as the next highest month. This agrees with the statements of many patients that they have exacerbations in spring and autumn, or that they

Fig. 6 (Case 6).—Localized intertriginous and palmar lesions of right hand.

"have trouble with their feet when the first warm weather comes." Nineteen stated that they were always worse in warm weather.

The subjective sensation varied from being unaware that there was a disorder present to incapacity for walking. One such extreme case occurred in a boy who was carried into the office. Three men were scarcely able to get about, and appeared with feet bandaged and covered with house slippers. Itching was the most constant symptom, and was complained of by fifty-seven patients.

Foot infections were observed in sixty cases; hand infections in twenty-three cases; feet only in forty-two cases; hands only in five cases, and both hands and feet in eighteen cases. In Djélaleddin-Moukhtar's series, the hand cases outnumbered the foot cases by 16 to 9.

The diagnosis of "dyshidrosis" had previously been made by trained observers in twelve cases. Of these, three had been so treated by Dr. Hyde and three by the writers. "Eczema" was next in order of frequency, with a total of six cases. One patient had been treated for "ivy poisoning."

The average number of visits made by each person was 3.5. The largest number of visits made by one person was thirteen. Thirteen patients made only one visit each; twenty-one patients made four or more visits; five patients made eight or more, and three made ten or more visits. The disorder recurred in six cases after apparent healing.

MICROSCOPIC EXAMINATION

The demonstration of the fungi in the tissue is readily made, as a rule; but occasionally considerable difficulty is encountered, particularly in those cases which have had a secondary dermatitis produced by irritants, or those in which a marked pyodermia has developed.

If vesicles are present, those which are showing signs of absorption, or even those which are beginning to desquamate, should be selected, because in the older ones the fungi will be found in greater numbers. The top should be removed with a thin, sharp blade, inverted on a glass slide, and covered with a drop of a 15 per cent. solution of sodium or potassium hydroxid. Over this is placed a cover glass, and the slide is heated until the fluid boils. Pressure is then applied to the cover glass, reheating and adding more solution as necessary, until the tissue is pressed out into a thin smear. Sabouraud[18] prefers a 30 per cent. solution, and insists that the tissue should be placed in a watch glass and boiled in this solution until it disintegrates.

The vesicles are so deep seated that unless care is exercised only the most superficial part of the roof will be removed and the vesicle may remain unopened. Only by cutting into the vesicle and liberating the fluid can one be sure of getting the entire roof, which is essential for the demonstration.

In the absence of vesicles, squames may be used with good results.

The morphology of the organism in the tissue has resembled, in this group of cases, that of *Epidermophyton inguinale*. The spores are never found in groups, but always in chains. They have a tendency toward a quadrilateral shape, and are somewhat loosely attached to each other. Interspersed with the chains of spores are slender mycelial threads running in all directions. After standing for days or weeks in sodium hydroxid, the spores may become swollen to several times their former size.

MYCOLOGY

As yet, no culture work has been sufficiently extensive to establish firmly the fungi involved in volar and intertriginous affections. Djélaleddin-Moukhtar makes no mention of cultures, but Sabouraud,[18] having seen some of the cases, is convinced that they were ordinary ringworm with merely accidental volar involvement, due probably to *Trichophyton violaceum*,

Fig. 7 (Case 7).—Extensive intertriginous and plantar desquamation with secondary infection.

asteroides, *acuminatum*, or *granulosum*, and in nowise connected with eczema marginatum. In 1910, Sabouraud was able to cultivate *E. inguinale* from four of six foot cases. Whitfield,[7] in 1911, did not succeed in getting a culture in any of his seven cases. Later in the same year[8] he reported fifteen additional cases, but speaks of only four cultures, three of which were *E. inguinale* and a fourth an unidentified organism, thought to have been helminthosporium. Sabouraud[19]

18. Sabouraud: Arch. f. Dermat. u. Syph., 1912, cxiii, 927.
19. Sabouraud: Brit. Jour. Dermat., 1911, xxiii, 390.

saw an intertriginous infection of the foot in a patient, who had just returned from the East, due to *Epidermophyton rubrum*, first described by Castellani.[20] Sabouraud,[18] in 1912, reported having seen twenty-three cases of eczema marginatum of the hands and feet in one and one-half years, but does not state how many yielded cultures. Kaufmann-Wolff,[9] in a series of twenty-five cases, obtained in all of them an organism which grew rapidly in a white or yellowish culture.

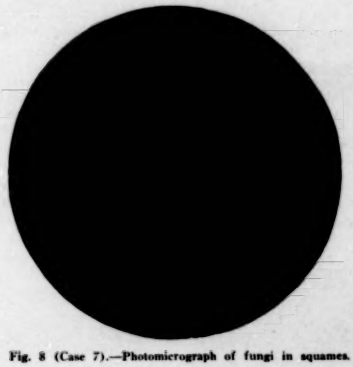

Fig. 8 (Case 7).—Photomicrograph of fungi in squames.

It was submitted to Sabouraud, who thought it probably *Trichophyton equinum*. Montgomery and Culver[10] grew *E. inguinale* from their case. Gougerot and Gancéa[21] recovered a yeastlike organism from an intertriginous foot case. The colonies were shiny, white or creamy, with a central button surrounded by a flat areola. Microscopically, it was found to be composed of filaments, pseudofilaments and budding cells. Hudelo and Montlaur[22] reported a similar organism found in three cases of intertriginous lesions of the feet, and one case with intertriginous lesions on the hands. Saphier[23] grew a fungus resembling *Trichophyton gypseum* from vesicles in the plantar and interdigital surfaces of the left foot.

The culture of the organisms, particularly in tissue taken from the feet, is attended by several difficulties, chief among which is the overgrowth by various cocci or by *Penicillium glaucum*. If discrete vesicles are present in nonmacerated epidermis, the chances of obtaining an uncontaminated culture are good. The region should be carefully cleansed, and the tops of the vesicles removed and cut into small bits with sterile knife and forceps and immediately planted on the surface of the agar. Despite the greatest care, however, one may get a troublesome growth of colonies of cocci, through which the fungus may find difficulty in growing.

The greatest difficulty was encountered in attempting to grow the fungus from the squames of the intertriginous lesions of the feet. In these moist and macerated squames, many varieties of organisms abound, all of which are rapid growing, whereas *E. inguinale* requires from five to eight days to develop.

20. Castellani: Brit. Jour. Dermat., 1910, xxii, 147.
21. Gougerot and Gancéa: Bull. Soc. franç. de dermat. et de syph., July, 1914; ibid., December, 1915, p. 335.
22. Hudelo and Montlaur: Bull. Soc. franç. de dermat. et de syph., July, 1914; ibid., December, 1915, p. 403.
23. Saphier: Arch. f. Dermat. u. Syph., 1916, cxxii, 626.

In order to secure the greatest surface with the smallest amount of agar, ordinary square shouldered whisky flasks were used. When properly prepared, the surface of the agar, with the flask on its side, is just level with the side of the neck. In making the plants, the flask can be placed flat on the edge of the table, and by means of a platinum loop small bits of tissue can be distributed evenly over the whole surface of the agar, with very little danger of contamination from the air. Two dozen plants, or two subcultures, will be easily accommodated in one flask, with room for the colonies to develop without interference. As a rule, *E. inguinale* colonies become pleomorphic and stop growing before the sides of the flask are reached. The "proof agar" of Sabouraud,[24] which consists of 4 per cent. crude maltose and 1 per cent. peptone, has been used in all of the cultures.

Owing to an inability to get material for the culture medium, our work was not begun until March, 1916. Since then, cultures have been made in seventeen cases. We intend to carry on this part of the work, a more extended report of which will be reserved for the future.

Of the seventeen cases, six yielded typical cultures of *E. inguinale*. Four of these were foot cases, one with lesions on the feet and groin, with the same organism in almost pure culture in each region, and one with vesicles on the hand, which had been preceded by eczema marginatum of the groin, axillae and neck.

The culture appears as a small, greenish-yellow point, which becomes powdery on the surface, with the color, as suggested by Sabouraud, of an unripe lemon beneath. The center gradually becomes acuminate, and may become elevated to the height of 1 cm. In the course of from three to six weeks, a fluffy, pure white tuft, or "duvet," appears at one or many points. This is known as the pleomorphic stage, and eventually overgrows the culture. Subcultures made from this have the same characteristics, and the original form cannot be recovered. If *E. inguinale* is grown on peptone agar without carbohydrate, this pleomorphic

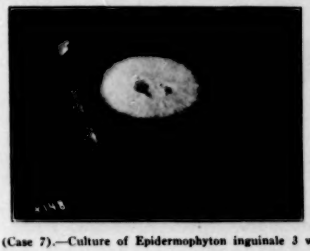

Fig. 9 (Case 7).—Culture of Epidermophyton inguinale 3 weeks old.

form will not appear. Microscopically, the fungus is easily identified by the fruitlike bodies.

In four cases, a pure white culture of aerial byphae was obtained. Microscopically, this is seen to be a mycelial thread, with short branches at right angles alternating at opposite sides of the stem, with a spore on the end of each. We have not identified this organism. In one of this group was found a fungus appearing somewhat similar to *E. inguinale*, except that the

24. Sabouraud: Les teignes, 1910, p. 112.

center is of a cream color, surrounded by a region of soft buff, and around the whole is a narrow margin of bright orange-yellow.

Three cases yielded a cream-colored colony, with a central button and a margin of pure white. This may be the same organism described by Kaufmann-Wolff.

Three cases gave almost pure cultures of white, shiny, smooth and moist colonies. Microscopically, the organism appeared as budding spores and short, or pseudofilaments. This corresponds with the description of the organism found by Gougerot and Gancéa.[21]

DIAGNOSIS

The diagnosis depends on the microscopic examination of the tissues. All vesicular, scaling or desquamating areas of the interdigital or volar surfaces of the hands and feet should be carefully examined for the presence of fungi. One negative examination is not sufficient evidence to dismiss the case as nonparasitic. Sabouraud describes a case in which he was unable to find the fungus at the time of the first visit, but when the patient was next seen, three months later, the demonstration was easily accomplished.

In all the cases in this series, mycelial threads were found in the vesicle tops or in the squames of the volar surfaces. Five other cases were seen in which it appeared that the organisms were present, and which yielded to treatment, but the fungi were not found, and therefore these cases have not been included.

Fig. 10 (Case 8).—Localized area of vesicles, desquamation, and scaling in palm.

TREATMENT

The treatment consisted of three preparations. In the severe pyodermic or eczematoid-dermatitis cases, a preliminary soothing treatment of naftalan combined with zinc oxid and starch was used. This was followed by 5 per cent. chrysarobin in traumaticin (chloroform solution of gutta percha) which was painted on until a good reaction occurred. Ordinarily, the chrysarobin in traumaticin was immediately prescribed and directions given for five daily applications. The patient was asked to return for observation after resting for a period of three days. If necessary, the treatment was repeated.

In another series of cases, an ointment recommended by Whitfield was used. This contains 2 parts of salicylic acid and 4 parts of benzoic acid in 30 parts of ointment base. It is applied daily and can be used for several weeks without producing irritation.

Chrysarobin was used alone in thirty-six patients, who made an average number of 3.6 visits. The ointment mentioned above was used alone in eight patients, by whom an average number of two visits was made.

The number of cases in which the ointment was used is obviously much too small for comparison, but it appears to be somewhat more efficient than chrysarobin.

CONCLUSIONS

1. Eczematoid and dyshidrotic lesions of the volar surfaces due to mycotic infection are much more common, at least in the Middle West, than the number of reported cases indicates.

2. The disorder occurs more frequently in men than in women, more frequently on the feet than on the hands, and more frequently in the warm and damp than in the cold and dry season.

3. The essential lesion is a deep-seated vesicle, in the roof of which mycelial threads may be found.

4. The areas affected, in the order of frequency, are (*a*) the fourth interspace of the foot; (*b*) the plantar surface of the arch, and (*c*) over the tuberosity of the fifth metatarsus.

5. The disorder frequently follows or precedes eczema marginatum, and is due in many cases to the same organism.

6. The pathogenic fungus may remain dormant in the cutaneous folds of the feet throughout the winter months. With the advent of warm weather an acute attack of vesication, desquamation and maceration may occur.

25 East Washington Street.

ABSTRACT OF DISCUSSION

Dr. William T. Corlett, Cleveland: A number of years ago Dr. L. W. Ladd of Cleveland called my attention to the presence of the trichophyton in lesions about the toes, and since that time I have been able to recognize that many of the so-called eczemas of the feet and less frequently of the hands are caused by this parasitic fungus. Of course, trichophytosis of the nails of the hands and feet has been recognized for many years, but it is only in recent years that the responsibility of the trichophyton for other lesions about the extremities has become known. When the nature of the eruption is suspected the microscope will reveal its true nature.

Dr. H. C. Baum, Syracuse, N. Y.: I never dreamed that such a large proportion of troubles of this sort might be due to a fungus infection. We now have the explanation of why the Roentgen rays were efficacious where other methods of treatment had failed.

Dr. Richard L. Sutton, Kansas City, Mo.: At the meeting in San Francisco last year, in discussing ringworm of the palms, I stated that the condition must be an extremely rare one. Since then I have found cause to change my mind. While visiting in Portland, a few days after the close of this session, Drs. King and Parker showed me two characteristic examples of the disorder, and a few weeks later Dr. William Allen Pusey, of Chicago, presented to me several photographs of ringworm of the palm. In their review of the literature the authors overlooked the recent report of Lane of New Haven, who described several cases of the affection.

Dr. Jay F. Schamberg, Philadelphia: There was a time when scabies was held to be of internal origin, of which assertion the symmetry of the lesions was regarded as corroborative evidence. It would be interesting in the cases of eczematoid ringworm to determine whether a positive complement fixation test could not be demonstrated, employing the ringworm fungus as an antigen. If there are cases

which prove refractory to treatment, I would suggest that a vaccine made from the organism be employed, for the value of vaccine treatment in ringworm has, I think, been demonstrated. I have seen a few cases of eczematoid ringworm of the hands and have been able to confirm the diagnosis by microscopic examination.

DR. A. RAVOGLI, Cincinnati: I have found that chrysarobin and the white precipitate ointment often produce dermatitis, and I have obtained better results with the Wilkinson ointment and the following: flores sulphuris and sapo viridis, each 2 drams; oleum cadi, 1 dram; terra alba, half a dram, and petrolatum, 1 ounce. This has often produced most satisfactory results. No preparatory treatment is necessary for removing the crusts, etc., because the ointment softens the scales. After two or three days I can see good results from its use.

DR. WILLIAM ALLEN PUSEY, Chicago: I happened to be in Paris in the summer of 1892, and I remember that one of the chief topics of discussion among the students around the St. Louis Hospital was the fact that a Turkish assistant of Professor Fournier had demonstrated the occurrence of ringworm of the palms in the form of scaling lesions which Fournier said he could not distinguish from syphilis. Since that time I have had this question in mind, but in a considerable number of these cases I am sure their character has escaped me. I think we are under many obligations to Dr. Ormsby and Dr. Mitchell for emphasizing the importance of this type of ringworm of the palms and soles. It is undoubtedly very common and equally undoubtedly seldom recognized. Of especial interest is the ease of cure of the cases which they report from the use of chrysarobin, or benzoic and salicylic acid ointment, for even when the condition is recognized its cure has been by no means easy. I have in some cases gone as far as I dared with Roentgen rays without effecting a cure, and I have seen the cases resist repeated applications of iodin along with careful dissection of the loosened epidermis.

Fig. 11 (Case 9).—Discrete vesicles on feet.

DR. J. M. KING, Nashville, Tenn.: Sabouraud first called attention to this condition in 1907, and since then I have used chrysarobin and iodin in liquid form, together with the ointment mentioned by Dr. Ravogli, making the applications three or four times weekly, and I have yet to see a case that has failed to respond to this treatment.

DR. GEORGE M. MACKEE, New York: These cases are seen as frequently in the East as in the Middle West. At the clinic of Dr. Fordyce we have had a large number of such cases, but we have had a great deal of difficulty in making the diagnosis. If you can identify the fungus, that settles it without question, but in some of our work we have found spores where they seemingly should not have been, and have failed to identify the organism in cases where we expected to find it. In short, our findings have not been entirely decisive or satisfactory. We have had cases where we obtained a pure growth in Sabouraud's medium, but the lesions were always squamous, never vesicular. In making our diagnosis, we depend not only on the regular cultural method, but also try the method of placing some of Sabouraud's medium on a slide and infecting it, and then allowing it to grow for a few days and examine it under the microscope.

DR. WALTER JAMES HEIMANN, New York: One difficulty in connection with this work in this country is that we do not make Sabouraud's medium properly. To get his results it is necessary to use the ingredients Sabouraud uses, and to compound them as he directs. If we do this the organisms will grow as Sabouraud describes, and the difficulty Dr. MacKee mentions will be eliminated. On given mediums the cultural characteristics of trichophyta are constant. Sabouraud has also worked out a very ingenious and valuable way of growing the organisms in a drop of medium on slides. This facilitates the study of their cultural properties, for the entire colony can be dried, stained and studied under the microscope.

DR. ERNEST DWIGHT CHIPMAN, San Francisco: There is apparently a difference in the virility of strains of fungi according to their geographic distribution. This is especially true of ringworm. The small spored ringworm of the scalp as seen in California is evidently much more amenable to treatment than in many other places, so much so that simple remedies, as 1 per cent. basic fuchsin ointment, will often speedily effect a cure. This is in line with my experience with the epidermophyton in which 1 per cent. chrysarobin and 2 per cent. white precipitate, combined, have seemed sufficient, although Dr. Ormsby has apparently required stronger applications for his cases.

DR. FRANK W. CREGOR, Indianapolis: I have several of these cases under my care, and they give me a great deal of trouble. We have been accepting our clinical diagnosis of eczema, and have neglected the use of our microscopes. The usual therapeutic measures do not relieve these cases, and I have been at a loss to know why. I only got good results when I used strong applications of sulphur. This paper clears up the situation, and we may expect better results in the future.

DR. CLARENCE J. BROEMAN, Cincinnati: I would like to ask the authors whether they traced the etiology to any definite source?

DR. JAMES HERBERT MITCHELL, Chicago: We have had one case in which the eruption coexisted with syphilis. Both conditions were recognized, and the lesions of both disappeared under appropriate treatment. Vesicles may be absent in certain stages of the disease, but at one period or another vesicles will be found. The absence of any eczematoid changes preceding the vesicles is evidence that the fungus is the primary etiologic factor, and not a secondary invader. We have not been able to determine the sources of infection other than its association with eczema marginatum of the groin, and its occurrence in different members of a family.

DR. OLIVER S. ORMSBY, Chicago: We found that the ointment we described was better than chrysarobin. It seemed to kill the parasite and cause it to disappear, whereas after chrysarobin we found the dead stained parasite. There was no doubt as to the specificity of these cases. There was no evidence nor history of preceding trouble, no inflammatory process of the skin. All our cultures were obtained from cases where the superficial lesions had been removed. We hope to go further into the mycology of these cases and make a report at some subsequent time.

Rupture of Uterus Under Pituitary Extract.—Five cases of fatal rupture of the uterus are reported by V. Marcondes from the Maternity at São Paulo, Brazil. The women had all been attended by midwives who gave the pituitary extract, and they were practically moribund when brought to the hospital, Dr. Marcondes protests against the use of pituitary extract by the ignorant, urging that midwives should be prohibited from using such a powerful remedy. In Spain this has been done. The *Revista de Medicina y Cirugia* of Havana has also published a recent article warning against the use of pituitary extract in ignorant hands. The writer, Arteaga, reports a case in which the midwife had given large doses of pituitary extract without effect, and he found transverse presentation, but he was able to perform version and the woman escaped mishap. Rio physicians have also recently been discussing the dangers from abuse of pituitary extract. Marcondes exclaims in conclusion that in lay hands it is actually a social scourge. His article appeared in the *Annaes Paulistas de Medicina e Cirurgia*, 1916, lv, 84.

THE EFFECT OF POTASSIUM IODID ON THE LUETIN REACTION *

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About a year ago Sherrick [1] reported that "a positive pustular or nodular luetin reaction can be obtained in 99 per cent. of all persons irrespective of the presence of syphilis, by the administration of potassium iodid, either simultaneously, or shortly before or after the intradermal test. Other substances, such as agar and starch, when injected intradermally, will give a similar reaction when potassium iodid is administered," and other drugs containing iodin were found to have a similar effect.

These observations were considered of such importance, not only in connection with the luetin test, but also in relation to anaphylactic phenomena in general and skin reactions in particular, that we have been studying the effect of iodids, bromids, chlorids, ether, chloroform and other drugs on the luetin, tuberculin and other skin reactions. The results with the iodids have proved definite and confirmed Sherrick's observation in practically every particular; since this drug is widely used, particularly in the very class of cases in which the luetin test is most likely to be employed in diagnosis, we have considered it advisable briefly to report at this time our observations regarding the influence of the iodids on the luetin reaction.

All of the luetin tests were conducted with Noguchi's luetin so diluted with normal salt solution that 0.1 c.c. contained the proper dose.

The regular intracutaneous luetin test was conducted among a selected group of laboratory assistants and medical students, all of whom were known not to be syphilitic, in good health and yielding negative Wassermann reactions with all antigens. All tests were negative and showed at most but a faint area of erythema about the needle puncture which subsided entirely in forty-eight hours. One week later all of the men began taking a saturated solution of potassium iodid in doses of from 10 to 15 drops according to a regular schedule extending over from one to three days, followed by a second luetin test. In every man but one, well marked reactions followed, characterized by a wide inflammatory areola, edema and a firm, deeply seated central nodule of a deep red which in all instances underwent necrosis with the formation of a small pustule. In our experience the pustules healed rather slowly, especially if large doses of potassium iodid had been taken.

Pustular reaction in a healthy nonsyphilitic person following the intracutaneous injection of 0.1 c.c. luetin immediately after the administration of 30 drops of a saturated solution of potassium iodid a day over a period of three days. A similar reaction at the site of a former preliminary luetin injection followed about seven days later.

Clinically these reactions resemble the ordinary luetin reaction very closely; the deep seated lesion and the tendency to pustulation are, however, more distinctive of the reaction under the influence of iodids.

Marked reactions were also observed following the administration of varying amounts of a saturated solution of potassium iodid among a group of patients suffering with various chronic diseases, all of whom had yielded negative luetin tests a month previously and negative Wassermann reactions with all antigens.

In a few instances in which the luetin test was repeated in normal nonsyphilitic persons who were not taking potassium iodid, and to test the possibility of a previous injection sensitizing the person to luetin protein, the results were negative.

In a number of instances 0.1 c.c. of a sterile 0.5 per cent. solution of agar agar was injected intracutaneously at the same time as luetin; positive reactions usually of a severer character followed in all instances during or shortly after the administration of potassium iodid.

The amount of potassium iodid capable of producing these results among nonsyphilitic individuals varies considerably, and is apparently somewhat dependent on individual susceptibility. Persons whose skins are for some unknown reason unduly susceptible to the effects of any protein skin test react in a most marked manner to the smaller doses; it is of interest to note that several of these persons were believed to have latent tuberculous lesions in the lungs. We have observed well marked reactions following the intracutaneous injection of luetin, after the administration of 10 drops of a saturated solution of potassium iodid once a day over a period of three days.

As pointed out by Sherrick, the administration of potassium iodid may cause the site of a former luetin injection to develop inflammatory phenomena. Our experience corroborates his observation, although we found this to occur rather irregularly. For example, 10 drops of a saturated solution of potassium iodid three times a day over a period of three days caused in the majority of men a reaction at the site of an injection of luetin given from seven to ten days previously. In one instance this reaction was delayed for almost three weeks. Among a group of patients no reactions were observed at the site of a former luetin injection given from four to six weeks previously, after the administration of 90 drops of a saturated solution of potassium iodid.

It is probable that the administration of iodids has been responsible for the production of a proportion of the "torpid" or "delayed" luetin reactions. At least we have observed reactions to luetin among normal persons when potassium iodid was administered from one to three weeks later.

Similar results have been observed experimentally among guinea-pigs and rabbits, although less marked and more difficult of interpretation, owing, in part at

* From the McManes Laboratory of Experimental Pathology of the University of Pennsylvania.

1. Sherrick, J. W.: The Effect of Potassium Iodid on the Luetin Reaction, The Journal A. M. A., July 31, 1915, p. 404.

least, to the difficulty experienced in injecting these animals intracutaneously.

In all these experiments, potassium iodid was administered by the stomach tube in doses corresponding to body weight; the luetin and agar skin tests were conducted with the same products and with the same amounts of each.

Guinea-pigs were found somewhat more susceptible than rabbits. Preliminary skin tests were negative, producing no apparent reaction after the lapse of forty-eight hours, or at most but a small nodule at the site of injection.

Among the guinea-pigs, positive reactions usually followed the administration of from 45 to 120 grains of potassium iodid per 132 pounds of body weight. Among the rabbits we found generally that it was necessary to administer 45 grains per 132 pounds of body weight each day for a period of from three to eight days before definite reactions to the intracutaneous injection of luetin and agar could be elicited. While a number of the reactions among these animals were of the pustular variety, they were generally milder than those observed among persons, and the "lighting up" of previous injections occurred but seldom.

It may also be stated here that a luetin prepared by cultivating *Spirochaeta pallida* in a fluid medium, centrifuging and washing the spirochetes once with normal salt solution, resuspending in normal salt solution, heating at 60 C. for an hour, and preserving with 0.25 per cent. tricresol yielded reactions among syphilitics, but proved less irritating and produced much milder reactions among normal persons taking potassium iodid, owing, in part at least, to the absence of ascites-agar present in the luetin as ordinarily prepared.

CONCLUSIONS

1. Well marked positive luetin reactions were observed among a group of healthy nonsyphilitic persons following the administration of potassium iodid.

2. Similer results were observed among nonsyphilitic persons suffering with various other diseases.

3. Somewhat severe reactions were observed following the intracutaneous injection of 0.1 c.c. of 0.5 per cent. agar-agar.

4. The strongest reactions were observed when the luetin was injected during or immediately after the ingestion of potassium iodid.

5. Positive luetin reactions were observed among normal nonsyphilitic persons as late as one month after the ingestion of large doses of potassium iodid.

6. In some instances the administration of potassium iodid caused the site of a former luetin injection to develop inflammatory phenomena progressive to pustulation.

7. Similar but less marked reactions to luetin and agar were observed among guinea-pigs and rabbits following the oral administration of potassium iodid.

8. Accordingly, a positive luetin skin test has little value in the diagnosis of syphilis among persons who are taking or have recently taken potassium iodid. The amount of iodid capable of producing these reactions varies considerably; also the length of time following the ingestion of iodid when this reaction to luetin may follow. For these reasons physicians should very carefully rule out the possible influence of iodids before conducting the luetin skin test.

SPLENECTOMY IN PERNICIOUS ANEMIA

STUDIES ON BONE MARROW STIMULATION *

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In the study of diseases of the blood and particularly of the effects of therapeutic procedures in such diseases it is necessary that one should be able to estimate by reliable criteria any alteration of the relative rate and degree of destruction and regeneration, at least of the formed constituents of the blood, the erythrocytes, leukocytes and platelets. Such information is particularly desirable in pernicious anemia, in which the spontaneous course of the disease is so bizarre. Marked improvement, usually called a remission, occurs frequently in the course of the disease and may easily be attributed to any incidental therapeutics.

The methods for studying the processes of blood destruction and regeneration are few. The enumeration of the formed elements may or may not be of value. It is evident that a given number of a blood element merely represents the balance of destruction and formation. The red cell destruction can be studied by the excretion of urobilin, and perhaps in certain instances by estimating the bile pigments in the blood.[1] Sellards and Minot [2] have pointed out that the study of the tolerance to injections of hemoglobin in man may perhaps furnish valuable information concerning erythrocytic destruction. The presence in the peripheral blood of the "bodies" described by Rous and Robertson [3] may also throw light on this subject.

The white corpuscle destruction in certain instances may perhaps be studied by the estimation of certain nitrogenous products in the urine.

There are no known methods for studying the destruction of the blood platelets, since we do not know their ultimate fate. We merely know that their life is short, being from three to six days.

The rate and degree of formation of the formed blood elements can be studied clinically in a number of ways. The chief source of these elements is the bone marrow. Thus, in order to gage the power of regeneration and formation of the formed elements, one must study the activity of the marrow. One must scrutinize, not only the increases of bone marrow activity, but also the intensity and quality of that activity and its possible relation to the therapeutic procedure.

Evidence of increased activity on the part of the marrow in the production of red cells may be shown by an increase of young forms of red corpuscles. The presence of increased numbers of reticulated red cells, especially of a certain type, the presence of blasts, Howell-Jolly bodies, polychromatophilia and certain types of stippling should be considered in studying the activity of the bone marrow. Variations of size

* From the Medical Service of the Massachusetts General Hospital.
* Read before the joint meeting of the Section on Practice of Medicine and the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.
* This paper and those by Drs. Krumbhaar and Miller, which follow, are part of a symposium on the spleen. The remaining papers by Dr. C. H. Peck, D. C. Balfour, and R. D. McClure, and the discussion will be published in our next issue.

1. Blankenhorn: Tr. Assn. Am. Phys., 1916.
2. Sellards and Minot: Jour. Med. Research, 1916, xxxiv, 469.
3. Rous and Robertson: Tr. Assn. Am. Phys., 1916.

and shape of the red cells may be of significance in certain cases.

The decreased activity in the production of red cells may be evidenced by an absence of the factors indicating activity. A rising red count does not necessarily mean an increased activity of the marrow, for the count may rise as the result of a lessened destruction. Increased activity is entirely consistent with an anemia when formation does not compensate destruction. Likewise, an extreme grade of anemia may be associated with decreased destruction and caused by decreased formation.

Evidence of the activity of the marrow in the production of white cells may be seen in the polynuclear count and perhaps in certain changes in the Arneth formula. A diminished activity is associated with a low polynuclear count and a resulting relative lymphocytic increase. In some instances with diminished activity of the bone marrow the liver and finally other structures may revert to a fetal condition, and white cells resembling fetal cells may be found in the blood stream, especially in cases of tumors involving marrow.

Könnecke,[4] by injections of nucleinate, and von Decastello and Krjukoff,[5] by injections of gelatin, have suggested that the degree of polynuclear leukocytosis caused by these substances furnishes an indication of the functionating ability of the marrow. From our study of this procedure we feel we gain some information concerning the functionating ability of the marrow in regard to its ability to form and send into the circulating blood leukocytes, but not necessarily information concerning the functionating ability of the marrow as a whole.

Increase of the blood platelets in the peripheral blood is also indicative of an increased activity on the part of the marrow supplying the blood platelets. The size, shape and character of these elements is probably also important in determining the activity of the marrow.

When the marrow is functionating above or below normal the three main elements are not necessarily equally affected. The effect may be entirely or predominatingly on one or two of these elements. It is thus necessary in studying the degree of bone marrow activity to consider not only one but all the factors involved.

We have followed our cases of blood disease in their spontaneous course and after treatment especially from the point of view of the degree of bone marrow activity.

Our, as well as other, previous studies have shown that while the amount of destruction of red corpuscles in pernicious anemia is somewhat reduced as a rule after splenectomy, yet this reduction occasionally occurs without therapy. The spontaneous course of the disease is so irregular and variable that it cannot be denied that it is possible to parallel the reduction of the destruction of the red cells after splenectomy with similar reductions without any treatment. Yet it seems probable that the destructive agents are modified to some extent after splenectomy. It is certain, however, that the destructive processes involving the red cells are still present.

Our fifteen cases of pernicious anemia subjected to splenectomy, in accord with other reported cases, show that the important features of the disease, namely, the typical blood picture and relapses with marked destruction, still persist. As von Decastello[6] and others have pointed out, it is possible to attribute improvement to an increase in blood formation as well as to a decrease in blood destruction. We have, therefore, submitted our cases of pernicious anemia to a critical study of the effect of splenectomy on the blood-forming organs with a view of determining if possible the value of this procedure in altering the activity of the bone marrow.

Fifteen cases,[7] which include all of the patients with pernicous anemia operated on by splenectomy at the Massachusetts General Hospital, were studied (from November, 1914, to May, 1916). Ten of these patients were operated on by one of us (Vincent). The other five were operated on by Dr. C. A. Porter, to whom we are indebted for the privilege of including the operative findings of his cases.

One patient with a red count below 1,000,000 died the day after operation, presumably of postoperative shock. There were no other immediate postoperative deaths, thus giving an immediate operative mortality of 6.6 per cent. The low immediate mortality indicates that with the proper selection of the time of operation in the course of the disease any considerable operative mortality is not to be expected.

Of the fourteen patients who survived, the operation in one case was too recent to afford any data. Of the remaining thirteen patients, one, operated on two and a half months ago, remains in the hospital on account of thrombosis. The other twelve left the hospital three to six weeks after operation, at which time the large majority presented no great change in their blood counts, and they all felt better, looked better, and were less yellow. In all of them the blood picture was that of pernicious anemia. Four patients showed considerable immediate and progressive improvement in the red counts and hemoglobin. Two of the four were transfused, one two days before, the other two days after operation. None of the other patients were transfused within ten days of operation.

The condition of these thirteen patients was ascertained as far as possible two months after operation. Three could not be said to have changed materially, particularly in their blood counts. One case showed a slight increase and one a moderate increase in the red cells. Eight showed a marked increase in the count of red cells. The red counts of these eight cases averaged approximately 4,000,000, with a corresponding improvement in their clinical condition. Nevertheless the diagnosis of pernicious anemia could be made from the blood films.

Of the thirteen patients, there were ten in whom six months had elapsed since operation. At the end of six months five of these ten patients had a relapse. Four of these five at the two months' period had presented very marked improvement. The fifth patient never showed any great improvement.

At the end of a year after operation we had received no information concerning two patients. These two patients had no relapse within six months. Two patients still alive had not yet gone a year after splenectomy. The patient who presented no improvement at the end of the second month period and was relapsing at the sixth month period was dead within a year after operation. Of five remaining patients, only one had certainly gone a year without a relapse. This patient,

4. Könnecke: Deutsch. Arch. f. klin. Med., 1914, cxv, 177.
5. Von Decastello and Krjukoff: Med. Klin., 1911, vii, 225, 267.

6. Von Decastello: Deutsch. med. Wchnschr., 1914, xl, 639, 692.
7. Lee, Vincent and Robertson: THE JOURNAL A. M. A., July 17, 1915, p. 216, reported five of these cases.

however, suffered a typical relapse and died sixteen months after splenectomy. One of the remaining four died sixteen months after operation in his second relapse. Another after sixteen months is now having a very serious relapse after several minor relapses. Still another is having his second serious relapse at the end of the year period. The last patient to be accounted for at the end of the year period had a relapse at six months. He was markedly improved by transfusion, and now has 3,000,000 red corpuscles.

The end results of splenectomy certainly fail to show any permanent results from this procedure.

The eventual progress of the disease is not changed. Nevertheless, it is striking that there was in eight out of thirteen cases a considerable temporary improvement in two months, which persisted in some cases to six months. This improvement was marked though not necessarily more marked than the improvement often seen occurring spontaneously; but it seemed to occur rather uniformly after this procedure.

The formed blood elements derived from the bone marrow have been followed in these fifteen cases. Observations on these elements are presented below.

Leukocytes.—Immediately after splenectomy, as has been the usual experience of others, we observed a leukocytosis, varying from 10,000 to 35,000, with increased polymorphonuclear percentage. This occurred within twenty-four hours after splenectomy and subsided within a few days. As pointed out by Cabot,[8] the white count varies with the progress of the disease, being higher when the number of red cells is higher. We found, as have others, that persistently after splenectomy there was a distinct tendency to a higher level of the white count than occurred in the usual course of pernicious anemia, in which there is usually a leukopenia with often an absolute diminution of polynuclear leukocytes. This increase was both lymphocytic and polymorphonuclear. Perhaps more often there is a relatively greater polymorphonuclear than lymphocytic increase. The polymorphonuclear cells, when increased, tended to give a normal Arneth picture, as contrasted to the abnormal right handed shift which is the usual picture in the spontaneous course of this disease, as pointed out by Briggs.[9] Occasionally a slight eosinophilia occurred.

In general, the leukocytosis immediately after splenectomy and the level of leukocytosis for some weeks afterward contrasted with the average before operation gave a rough index of the future reaction in the red cell forming part of the bone marrow. The patients with the highest leukocytosis tended to show the greatest improvement after splenectomy. Per contra, the patients who showed only a slight increase after splenectomy eventually showed little improvement after this procedure. Such figures do not definitely prove this, but they strongly suggest that a persistently very low polymorphonuclear count in this disease is of value as one of the indicators of bone marrow exhaustion. Under such conditions little improvement is to be expected from any therapeutic measures directed at increasing the activity of the bone marrow.

Platelets.—The number of platelets in pernicious anemia is usually low. Like the leukocyte count, the number of platelets tends in general to follow the curve of the red cells in the usual course of the disease. The platelets show a definite increase three to seven days after splenectomy. This increase usually takes the platelets not only above the average count in pernicious anemia, but often well above the normal, in one of our cases even to 900,000. This increase is usually persistent, though fluctuations occur. Besides the increase in platelets, there are changes in their morphology. A tendency to abnormally large platelets occurs in pernicious anemia. After splenectomy the presence of a considerable number of very large platelets is striking. There also seems to be an abnormal variation in shape. Like the increase in the white count, the platelet increase seems to be of some value as an indicator of the ultimate reaction of the bone marrow in forming red cells. Likewise, a persistently low platelet count in pernicious anemia seems to be one of the criteria of bone marrow exhaustion.

In this connection we have been impressed by the association of the increase of platelets and thrombosis. Thrombosis is not an uncommon complication of splenectomy. It has been reported as a postoperative cause of death. Of course the platelets are not the sole factor in thrombosis. The immediate and directly exciting cause may be infection or some unknown agent. We have noted thrombosis or phlebitis in three of our cases.

In one case it was noted on the fifth day after operation and involved many veins. In the second case it was noted after three weeks. In the third case it was first observed when the patient reported at nine months. In a case of splenectomy in pernicious anemia of Dr. W. S. Thayer, studied by one of us,[10] thrombosis was noted on the ninth day. In this case extensive thrombosis was the cause of death. In our second case of thrombosis a severe gastro-intestinal disturbance was present on the tenth day, although the phlebitis was not evident until the twenty-first day. All of these cases had at the time of the phlebitis a very large increase of platelets. The majority of our other patients had some days after operation, at the time of marked increase of the blood platelets, vague gastro-intestinal symptoms of varying severity. These symptoms were unlike any that they had had before operation and furthermore were quite different from the gastro-intestinal symptoms, so common after any abdominal operation. The association of this condition with thrombosis or phlebitis of some of the mesenteric veins is possible. This association is of course not proved. It may not be amiss to point out that thrombosis in the usual course of pernicious anemia is extremely rare, but apparently is not uncommon after splenectomy. We are inclined to believe that the thrombosis is in some way related to the marked increase of platelets.

Howell-Jolly Bodies.—There occur in the red cells, particularly after splenectomy, and in other conditions often associated with grave anemia, certain round bodies known as Howell-Jolly bodies. The nature of these bodies is not clearly understood, although they are fairly generally assumed to be nuclear fragments. We were able to find a very few of these bodies in three of our cases before operation. It is probable that these Howell-Jolly bodies could have been found in the other cases if the blood had been subjected to a similar prolonged search. They occurred constantly in every case after operation. These bodies usually appeared in small numbers the day after splenectomy, and gradually increased. In some instances 25 per cent. of the red cells contained them. The usual per-

8. Cabot: Modern Medicine, Osler and McCrae, 1913.
9. Briggs: Am. Jour. Med. Sc., 1914, cxlviii, 413.
10. Minot, Denny and Davis: Arch. Int. Med., 1916, xvii, 101.

centage was from 2 to 10. Their percentage fluctuated, but they were always present in fair numbers as long as we made observations. Their morphology varied considerably; there occurred differences in regard to size, situation in the red cells, multiplicity, and their association to reticulated and polychromatophilic cells. We are unable at present to correlate positively variations in number or type with the clinical progress of the disease. We are inclined to agree with the general belief that in some way these bodies are related to an increase of bone marrow activity or irritation, or possibly to some change of threshold of output of red cells.

Blasts.—Ten of the eleven cases on which we have adequate data presented within a few days after operation, like other reported cases, a shower of blasts of varying degree. The maximum number of blasts seemed to occur approximately two to ten days after operation. The duration of the blast crisis varied widely and in a few cases persisted for some weeks. The intensity of the reaction in blasts could not be anticipated by the preoperative number of blasts in the blood. The blood of one patient who presented a large number of blasts after operation showed a very rare blast on repeated examinations over a long period of time before operation. It has been our experience that a shower of blasts often precedes a spontaneous remission. This remission may be quite transitory and slight. However, a shower may be seen just before death. After operation a shower of blasts, especially when persistent, seemed to be associated with an ultimate improvement. The findings were not constant and we do not feel that the presence of blasts even in considerable numbers at any stage of the disease including after splenectomy is of much significance as to the future course of the disease.

Reticulated Red Cells.—The percentage of reticulated red cells may perhaps be taken as a measure of the hemopoietic activity of the bone marrow. Normally, about 0.8 per cent. of the red cells are reticulated. In the spontaneous course of pernicious anemia one sees wide fluctuations in the percentage of these cells containing a "reticulum" vitally stained with brilliant cresyl blue. This percentage varied in our cases, from 0 to 20. A high percentage of reticulated cells probably indicates an increased activity of the part of the bone marrow that produces red cells. This increased activity of the bone marrow is not necessarily accompanied by either a rise in the count of the red corpuscles or in clinical improvement, since this may or may not be counterbalanced by an increased destruction. Likewise, in the event of decreased activity of the bone marrow, an associated decrease in the blood destruction may leave the number of the red cells and the clinical picture unchanged. In order to form any estimation of the bone marrow activity, as indicated by the reticulated cells, it is necessary to make continuous observations over periods of time. Occasional observations are of no value, as they may indicate only transitory tendencies. However, our data show that curves plotted from frequent observations are reliable indicators of bone marrow activity and are the forerunners of increased red cell counts and of clinical improvement in the absence of excessive blood destruction.

Some studies, as yet incomplete, of the character of the reticulated cells, not only in pernicious anemia, but also in other conditions, strongly suggest that the character of these cells is at least as important as the percentage in determining the intensity and permanency of the bone marrow activity. We consider of particular importance the presence of heavy, knotted reticulum, usually in the center of the cell. Such a reticulated cell is found in fairly large numbers under the recognized conditions of very active blood regeneration, as we have seen persistently in hemolytic jaundice and temporarily after direct hemorrhage in normal persons.

Other characteristics of these reticulated cells that seem to us of probable significance are the size of the reticulated cell, the hemoglobin content, the amount, quality, granulation, and distribution of the reticulum. Also of doubtful significance in regard to bone marrow activity is the presence, which we have noted in a few cases, of the hemoglobin-free reticulated cells or bodies, resembling those described by Rous and Robertson, which they consider as probably red cells in the stage of destruction. We are inclined to believe that when the red cells contain a few scattered, short strands of reticulum, particularly when arranged in the periphery of the cell, the actual percentage of reticulated cells is of slight significance.

In general, two to five days after splenectomy in pernicious anemia we found a slight temporary rise in the reticulated cells. These findings coincide with the blood findings at the time of discharge from the hospital about three weeks later. At that time the red count was usually not much increased, but in the event of a persistent increase of the reticulated cells we found marked clinical improvement associated with an increased red count. This was particularly marked in the two patients on whom blood transfusion was performed at the time of operation. In these patients this rise persisted and reached in eight to twelve days a level of about 15 per cent. of reticulated cells, chiefly of the knotted centrally-placed type. In the event of a short and slight temporary rise in the reticulated cells, if an increase in the red count developed later, there first appeared a second and this time a considerable rise in the reticulated red cells. This rise was usually evident about three weeks after splenectomy and was often associated with a shower of blasts. With the appearance of a definite remission, when the red cells approached normal, the reticulated red cells fell to normal figures or lower, with the removal of the necessity of abnormal bone marrow activity.

The degree of the response varied. Those cases in which increases of reticulated cells had been observed either in the spontaneous course of the disease or after transfusion usually showed greater increases after splenectomy. However, we were able to observe increases in reticulated red cells after splenectomy in two cases in which no essential increase in reticulated red cells had previously been noted, either in the spontaneous course or after transfusion. These increases tended to be relatively slight, since in such instances it is probably safe to assume that we are dealing with an exhausted bone marrow, apparently incapable of reacting to anything except the strongest stimulation, that is, the changes, whatever they may be, that take place after splenectomy. Two patients in severe relapse after splenectomy have shown a truly remarkable blood picture of bone marrow reaction following transfusion. This was not seen in three others.

The increased reacting power of the bone marrow under the influence of transfusion in the first two cases seems to be related in some way to the absence of the spleen.

The further study of the blood films stained by Wright's stain showed only the characteristics that have been noted previously by us and others. Our observations on polychromatophilia, anisocytosis and stippling have furnished little additional evidence as to the functionating ability of the bone marrow.

While the presence of blasts and of Howell-Jolly bodies is in some way related to the activity or change in threshold output of the bone marrow, we are unable to correlate definitely our data concerning them and those of the reticulated red cells. The reticulated cells furnish the most reliable data concerning the activity of the erythrocytic elements of the bone marrow. The increase in the platelets and the polynuclear leukocytes after splenectomy in pernicious anemia furnishes further evidence of the effect of this procedure in stimulating the bone marrow of these cases.

It is to be noted that splenectomy in pernicious anemia has in nowise a specific stimulating effect on any one portion or on any one function of the bone marrow. It apparently acts grossly on all portions, though the effects are seen at different periods of time in relation to the operation. We attribute the temporary improvement in pernicious anemia after splenectomy to two factors: first, an associated diminution in the blood destruction; and second, the associated increase in activity of the bone marrow. We do not attempt to explain the precise mechanism by which splenectomy brings about an increased activity of the marrow. Certain stimulating effects after splenectomy are seen almost immediately, as in the case of the increase in the polymorphonuclear leukocytes. The increase in the platelets tends to occur somewhat later, and the main increase of the reticulated cells, when it occurs, seems to be inaugurated still later. This effect on the part of the bone marrow which forms red cells is much more difficult to bring about and also is slower.

While in general one assumes that the changes in activity of the bone marrow is induced by some unknown irritating or stimulating process, it is possible to explain certain features on other grounds. It may be that, as Naegeli[11] has suggested, we have the threshold of output changed so that cells normally present in the bone marrow but not in the blood may appear in the peripheral circulation. Perhaps the spleen normally may have some inhibitory effect on the bone marrow. On the latter basis it is hard to explain the considerable leukocytosis, similar to that occurring in certain infections, the increase of platelets, and the occurrence at necropsy in pernicious anemia of a red bone marrow. In favor of this assumption one may point to the appearance of Howell-Jolly bodies and certain other characteristics of the red cells that cannot be positively related to such characteristics of the red cells as reticulation, which are generally assumed to indicate, not only the earlier appearance of these cells, but also an actual increase in the formation. It seems probable that both these considerations play a part in the changed picture. We use the term stimulation of the bone marrow in the general sense of indicating the inauguration of the changes.

By the use of these methods we conclude that one finds stimulation of the bone marrow in pernicious anemia frequently occurring spontaneously. One may find stimulation of the bone marrow usually associated with improvement after transfusion and after splenectomy. Splenectomy seems to result in the greatest stimulation of the bone marrow of any known therapeutic measure. It acts on the whole bone marrow and not only on the portion that forms red cells. However, splenectomy does not alter the essential course of the disease. While more constant stimulating effects are seen after splenectomy, yet we can roughly parallel any individual case of bone marrow stimulation after splenectomy with a case of bone marrow stimulation that occurred either spontaneously or after transfusion.

It is evident that from splenectomy one can attain stimulation but once. Transfusion, while perhaps of less constant and of less active effect, has two great advantages. It is relatively simple and can be repeated a number of times. Transfusion does not modify the destructive agencies at work in pernicious anemia. These considerations must be carefully weighed in advising any therapeutic procedures in this disease.

11. Naegeli: Blutkrankheiten und Blutdiagnostik, Leipzig, 1912.

LATE RESULTS OF SPLENECTOMY IN PERNICIOUS ANEMIA

A STATISTICAL AND CRITICAL REVIEW *

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The striking improvement that has been shown to follow removal of the spleen in such diseases as hemolytic jaundice and Banti's disease has naturally led to an extension of this clinical procedure to allied conditions. In 1913 three investigators, Eppinger,[1] Decastello[2] and Klemperer,[3] working independently, applied splenectomy to the relatively common and grave disease, pernicious anemia. It is interesting that Eppinger was led to adopt this procedure by observing after splenectomy a diminished output of urobilin and other evidences of decreased hemolysis. Decastello, on the other hand, had noted the improvement that followed splenectomy in the related conditions, hemolytic jaundice and Banti's disease; whereas Klemperer was influenced by the clinical observation that splenectomy for such conditions as rupture of the spleen was in some instances eventually followed by polycythemia.

Such marked improvement was noted in these earlier cases that the procedure was quickly and widely repeated, chiefly in Germany and in this country, so that a fairly large group has already become available for study. More prolonged observation, however, has showed that besides a considerable mortality from the operation and postoperative complications, very few of the patients continue steadily to improve; in almost all the characteristic blood picture of pernicious anemia remained, and not a few died from relapses of the disease in the first year or two after operation. The object of this paper is to ascertain as far as possible by a correlation of the published reports, with later results obtained by personal communication, just how valuable splenectomy has thus far proved to be in pernicious anemia.

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* Read before the joint meeting of the Section on Practice of Medicine and the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Eppinger, H.: Berl. klin. Wchnschr., 1913, xxix, 2409.
2. Decastello, A. von: Deutsch. med. Wchnschr., 1914, xl, 639; later reports by personal communication to the author.
3. Klemperer, G., and Hirschfeld, H.: Therap. d. Gegenw., 1913, liv, 385.

Although it has been impossible to get additional reports from some of the German authors, and of some patients who have been lost sight of, nevertheless the results obtained in the last two and one half years are sufficiently concordant to give evidence of some value. In drawing conclusions from any such review, however, it must be remembered that certain difficulties are unavoidable. For instance, the dividing line between pernicious anemia and some of the other primary blood diseases is necessarily such a shadowy one that the possibility of an incorrect diagnosis must always be borne in mind. Then, too, the concept of pernicious anemia varies so much with different authorities that cases included as such by one author might easily be rejected by another. Thus one of the earlier cases of splenectomy that was followed by marked and long-continued improvement, when subjected to critical analysis, seems to the writer rather a case of acquired hemolytic jaundice than of true pernicious anemia. In another case reported as pernicious anemia, the diagnosis was later changed to hemolytic jaundice on account of the subsequent appearance of acholuric jaundice with diminished resistance of the erythrocytes. As such variations in diagnosis are apt to include less serious diseases under the head of pernicious anemia, or diseases in which splenectomy is already known to be of benefit, the present statistics will be correspondingly favored by such inclusions. In applying the present figures to prognosis, however, it is fair to offset the inclusion of such cases with the results that must inevitably follow the better selection of cases and better preparation for operation. A third consideration is that the term pernicious anemia may later be found to include more than one clinical entity. (Compare the great variations that occur in the size of the spleen, in the bone marrow reactions, in the evidences of hemolysis, and in the duration of the disease.) If this were found to be true, it might well be that some of the apparently discordant results that have been observed after splenectomy are due to the fact that the operation was of value in one or more types and contraindicated in the others. The results of these studies are included in Table 1.

ANALYSIS OF RESULTS

From Table 1 it will be seen that of the 153 individuals whose spleens were removed, thirty died within six weeks, presumably from the effects of the operation, a mortality of 19.6 per cent. Of the remaining 123 patients, all but twenty-four showed a distinct improvement, both in general condition and in blood picture. Of the twenty-four individuals that survived the operation but failed to improve, a few were obviously harmed by it. To this group belongs Pappenheim's case, splenectomized at a favorable time, when the patient was entering a remission. The condition, nevertheless, was aggravated by the operation, the blood showed signs of increased destruction and a serious relapse began. The improvement noted in the majority of cases lasted varying periods. Thus at the end of six months, of fifty-three patients who had survived operation for more than six weeks and were still under observation, forty-four had still continued to improve and none had died, but nine had already relapsed.

TABLE 1.—RESULTS OF SPLENECTOMY IN PERNICIOUS ANEMIA

Observers	References	Number of Cases	Postoperative Results			Total Deaths
			Deaths	No Improvement	Improved	
Decastello, A. von	Deutsch. med. Wchnschr. 1914, xl, 639	13	4	1	8	7
Eppinger, H.	Berl. klin. Wchnschr., 1913, xxix, 2409	7	0	0	7	7
Fahreus, M. B.	Svensk. Läk. Förhandl., 1915, viii, 749	3	1	0	2	2
Fenckel	Verhandl. d. deutsch. Gesellsch. f. Chir., 1914, xliii, 223	2	0	2	0	1
Flörcken	Verhandl. d. deutsch. Gesellsch. f. Chir., 1914, xliii, 221	2	1	0	1	1
Frangenheim	Sitz. d. allg. Aerzt. Ver. z. Köln. München. med. Wchnschr., 1914, lxi, 1760	2	1	1	0	1
Giffin, H. Z.	Personal communication to the author	31	3	6	22	7
Guleke	Verhandl. d. deutsch. Gesellsch. f. Chir., 1914, xliii, 227	2	2	0	0	2
Hansing, W.	Med. Klin., 1914, x, 1344	2	2	0	0	2
Hossli, H.	Cor.-Bl. f. schweiz. Aerzte, 1914, xliv, 1171	2	1	0	1	1
Klemperer, G.	Therap. d. Gegenw., 1915, lv, 255	14	4	2	8	5
Lee, R.	THE JOURNAL A. M. A., July 17, 1915, p. 216; personal communication to the author	15	1	4	10	3
Longcope, W. T.	Personal communication to the author	2	1	1	0	1
Percy, N. W.	Surg., Gynec. and Obst., 1915, xxi, 500; personal communication to the author	19	2	2	15	4
Robiee, W. W.	THE JOURNAL A. M. A., March 6, 1915, p. 796; personal communication to the author	2	0	0	2	1
Roemer	Berl. klin. Wchnschr., 1914, li, 669	2	0	0	2	1
Thayer, W. S.	Tr. Assn. Am. Phys., 1914, xxix, 480; personal communication to the author	2	0	0	2	1
Vogel, C.	Personal communication to the author	7	3	1	3	4
Jagic, N. von	Wien. klin. Wchnschr., 1914, xxvii, 1536	3	0	0	3	0
Single cases[4]		21	4	4	13	9
Total		153	30	24	99	53

4. The single cases were reported by various authors as follows:
Anschutz: Verhandl. d. deutsch. Gesellsch. f. Chir., 1914, xliii, 232.
Baldwin, J. F.: Med. Rec., New York, 1915, lxxxvii, 230.
Brill, N. E.: Tr. Assn. Am. Phys., 1915, xxx, 347.
Buerger, L., and Ottenberg, R.: Med. Rec., New York, 1914, lxxxvi, 860; later report by personal communication to the author.
Coleman, W.: Tr. Assn. Am. Phys., 1914, xxix, 470.
Dahl, R.: Hygiea, 1914, lxxvi, 471; later report by personal communication to the author.
Harpole, W. S.: Surg., Gynec. and Obst., 1914, xviii, 243; later report by personal communication to the author.
Huber, O.: Berl. klin. Wchnschr., 1913, L, 2179; later report by personal communication to the author.
Judell: Personal communication from Dr. Moffitt to the author.
Mann, A. T.: Journal-Lancet, 1915, xxxv, 294.
Moffitt, H. C.: Am. Jour. Med. Sc., 1914, cxlviii, 817.
Mosse, M.: Berl. klin. Wchnschr., 1913, L, 2088.
Muhsam, R.: Deutsch. med. Wchnschr., 1914, xl, 380.
Pappenheim, A.: Deutsch. med. Wchnschr., 1914, xl, 412.
Penrose, C. A.: South. Med. Jour., 1915, viii, 879.
Pepper, O. H. P., and Austin, J. H.: Arch. Int. Med., July, 1916, p. 131.
Port, F.: Berl. klin. Wchnschr., 1914, li, 546.
Rodman, J. S.: Personal communication to the author.
Stewart, F. T.: Personal communication to author.
Talley, J. E., and Jopson, J. H.: Personal communication to the author.
Turk, W.: Deutsch. med. Wchnschr., 1914, xl, 371.

At the end of the first year after operation, there remained twenty-seven patients who were still under observation. Of these, Decastello's series is the most important, not only because he and Eppinger were the first to try this procedure and therefore the cases could be followed for a longer time, but because the early successful results have been greatly modified by time. Of six patients at the time of his publication several months after operation, four showed such great improvement that except for the microscopic appearance of the blood they might have almost been considered cured. Two years later, however, two were dead and one was in as poor condition as before operation. Of the other two important early series, Eppinger's and Klemperer's, it has proved impossible to get additional information. The figures for the whole group of twenty-seven cases, however, show that the initial improvement has been maintained in less than half of the cases.

TABLE 2.—LATE RESULTS AFTER SPLENECTOMY IN PERNICIOUS ANEMIA

	After One Year	After Two Years
Number cases known	27	6
Still improved	11	3
Relapsed	7	2
Died subsequently	9	1

A small but interesting group is formed by six individuals that have been known to have lived two years or more after operation (Decastello 2, Giffin, Harpole, Huber, Thayer). Of these, Giffin's patient had had the disease for two and a half years; the anemia was not extreme at the time of the operation, and the spleen was much enlarged (1,640 gm.). Improved by the operation, he died three years later from pneumonia. In Decastello's two cases the disease had existed for less than a year, the anemia was severe, and the spleen but slightly increased in size. Both patients improved after operation both clinically and as to the blood picture; but whereas one in a subsequent report was in poor condition, the other was without symptoms, although the blood picture was still that of pernicious anemia. Harpole's patient was known to have had pernicious anemia for two years, and at the time of operation the anemia was moderately severe and the spleen twice the normal size. After splenectomy there occurred immediately an active bone marrow reaction with marked clinical improvement. The patient has continued in fair health, with only a slight anemia, but with persistence of spinal cord symptoms. Huber's patient, who was considered moribund at the time of operation, improved rapidly for seven weeks, relapsed, and later underwent a spontaneous remission. After two and a half years, she was still in good condition and able to do her housework, but still anemic. Thayer's patient, having had the disease one year, improved after splenectomy, although there was no bone marrow reaction. After eighteen months the patient relapsed to the same condition as before operation and was last reported in poor condition.

Estimation of the value of such a procedure as splenectomy in pernicious anemia must take into consideration not only the actual results obtained, but a comparison, as far as is possible, with the probable results if operation had not been undertaken. Thus, whereas we have seen that splenectomy caused a quick and marked improvement in 64 per cent. of all patients, natural remissions occurred at one time or another in over 80 per cent. of the patients of Cabot's[5] series treated by the older conservative methods. One cannot maintain from this that perhaps the improvement after splenectomy was only a coincidental remission, because the onset of improvement was too closely and constantly related to the postoperative period; but it does offer some basis for the contention that other methods of treatment may yield results as striking as those following splenectomy. However, from the aspect of duration of the disease the evidence is more in favor of the splenectomized series. In Cabot's series, almost half died in the first year of the disease, and of the remainder, one third died in the next year. As the duration of the disease in the splenectomized series had already averaged one and a half years before operation, they should be more properly compared with the remainder of Cabot's group. By the end of the first year conditions in the splenectomized group were as follows: Of thirty-three patients surviving the operation, twenty-four were still improved, three had failed to show improvement or had relapsed to their preoperative condition and six had died. If postoperative deaths, however, were to be included, only about half of those whose fate was known were still alive at the end of the first year. From both these points of view, therefore, there are no clear indications as to the value of splenectomy.

The changes in the blood picture after splenectomy are striking and fairly constant. Forty-seven cases are stated to have had a distinct postoperative blood crisis (appearance of normoblasts, megaloblasts, reticulated erythrocytes, Jolly bodies, etc., in larger quantities); and as statements that the blood crisis failed to appear are very rare, it is fair to assume that such a phenomenon is at least a frequent occurrence. In most of the patients who recovered the stimulation forms soon grew fewer in number and coincident with the signs of general improvement the hemoglobin and red cell count rose. The color index, however, usually remained high. As might be expected, also, the nucleated forms became fewer or disappeared; and yet statements are almost unanimous that the microscopic features of the blood (tendency to macrocytosis, poikilocytosis, etc.), even in many cases that showed almost normal counts, remained suggestive of pernicious anemia. Those patients who died within the first six weeks after operation showed either very slight increase in the blood picture or an actual deterioration; whereas death occurring after that period was in many cases preceded by a distinct improvement in the blood picture with the usual signs of a remission.

TABLE 3.—RESULTS ACCORDING TO AGE OF PATIENT, BASED ON ONE HUNDRED AND TWENTY-ONE CASES

Age, Decade	Number Cases	Postoperative Results			Subsequently Died
		Deaths	Not Improved	Improved	
3d	8	2	1	5	1
4th	23	4	2	17	2
5th	42	5	2	35	8
6th	28	4	5	19	6
7th	9	5	2	2	1

Those few patients who up to the present time have continued well after operation must also be taken into

5. Cabot, R. C.: Modern Medicine, Ed. 2, iv, 639.

consideration. By the older methods of treatment, Cabot in the first edition of Modern Medicine stated that six out of 1,200 cases after six years of health might be said to have been cured. In the second edition this number was reduced to three. May it not develop that a larger percentage of such "cures" will follow splenectomy, even though the blood picture does not return absolutely to normal? Another point brought out by study of the blood picture at the time of operation is that if the operation is undertaken before the blood has reached an extreme degree of deterioration, not only is the operative risk lessened,

TABLE 4.—RESULTS ACCORDING TO DURATION OF DISEASE, BASED ON NINETY-FIVE CASES

Duration	Number of Cases	Postoperative Results			Subsequently Died
		Deaths	Not Improved	Improved	
Under 6 months	17	4	..	13	...
Six mos. to 1 year	26	4	3	19	3
One to 2 years	26	3	6	27	8
Over 2 years	16	6	1	9	4

but the improvement is greater and more lasting. In any case it is wise to precede it with one or more transfusions.

The average age of the patients at the time of operation was 45; the average duration of the disease at that time 1.6 years. Sex has not been found to exert any influence on the results. If the results are analyzed in groups subdivided according to age, it appears (as one would expect) that less favorable results are obtained in patients in the sixth and seventh decades. A similar arrangement on the basis of duration of the disease, shows that the best results are obtained (after the operation has been successfully passed) in those patients who have had the disease for less than one year.

When arranged according to the degree of anemia at the time of operation, one fact is patent, that the operative risk is much greater in those cases in which hemoglobin is below 20. This is, of course, for this disease, a lower level even than that of one million erythrocytes.

Except for this point, on account of the great fluctuations in blood counts incident to the disease and following transfusions, it is difficult to estimate whether or not the previous condition of the blood has any marked effects on the result obtained. The impression is gained, however, that the best results follow splenectomy in those cases that are not extremely anemic at the time of operation and that have shown considerable fluctuations in the blood picture.

Information as to the size of the spleen was secured in eighty-nine cases. In twenty-eight cases (31 per cent.) the spleen was either small or approximately normal in size. In forty-one cases (46 per cent.) the spleen was slightly enlarged (between 250 and 500 gm.); and in twenty cases (23 per cent.) it was considerably enlarged. In other words, although seldom palpable before operation, it was distinctly enlarged in over two thirds of the cases. If the results of splenectomy are subdivided according to the size of the spleen, it will be seen that better postoperative results were obtained in the cases with enlarged spleens. The third group in this arrangement, however, is the only one that could be said to have fared better than another as regards the ultimate outcome of the disease.

THE EFFECT PRODUCED BY SPLENECTOMY

Whatever the cause of the distinct improvement after splenectomy in those patients who survive the operation, it is obvious that it is not due to the removal of the sole cause of the disease. If Eppinger's theory of thickened arteriole walls in the spleen with consequent damming back and destruction of red cells in the splenic pulp were correct, removal of the spleen should indeed cure the disease; but our studies show that this is not the case. On Eppinger's theory, also, the characteristic remissions of pernicious anemia would be difficult to explain.

The postoperative blood crisis discussed above, and the subsequent improvement in the blood picture, decrease in urobilin, etc., indicate both that a stimulus has been applied to the bone marrow and that a source of blood destruction has been removed. Lee's findings of an increased number of platelets after splenectomy would also support the bone marrow stimulation theory. Hypotheses to explain these phenomena have been unsatisfactory and the relevant experimental evidence often contradictory. Klemperer believes that the bone marrow activity is induced by removal with the spleen of an inhibiting hormone, but from experiments in our laboratory we have found (in normal animals, to be sure) not only that this bone marrow activity does not occur until after several months have elapsed (Pearce and Pepper[6]) but also that fresh splenic extract stimulates instead of inhibiting the bone marrow (Krumbhaar and Musser[7]). The cause for the blood crisis, therefore, must probably be sought elsewhere; perhaps, as has been suggested, in bone marrow stimulation from metabolic products or from abnormal constituents of the erythrocytes that are allowed to remain in the blood by the removal of the spleen (Decastello). It is also difficult to prove that the lessened hemolysis after splenectomy, as shown by decrease output of urobilin, is actually due to the absence of the spleen. Neither normal spleens nor those removed at operation in cases of blood disease (Coleman, Stewart) can be shown to possess demonstrable hemolytic activity, and studies of the blood

TABLE 5.—RESULTS ACCORDING TO PREOPERATIVE DEGREE OF ANEMIA, BASED ON ONE HUNDRED AND FOURTEEN CASES

Hemoglobin	Number of Cases	Postoperative Results			Subsequently Died
		Deaths	Not Improved	Improved	
Below 20	9	7	1	1	...
Below 30	29	6	2	21	3
Below 40	33	2	4	20	7
Above 40	43	7	7	29	5

entering and leaving the spleen have also failed to throw light on this supposed function of the spleen (Krumbhaar and Musser[7]).

Another factor to be considered is changes in the red blood cells themselves. In one case that I had an opportunity to study (Stewart's), the resistance of the erythrocytes was distinctly increased after splenectomy, so that this might constitute one of the factors of improvement after operation. A similar increase in the resistance of the erythrocytes has been found after the removal of the spleen in normal animals (Pearce and

6. Pearce, R. M., and Pepper, O. H. P.: Jour. Exper. Med., 1914, xx, 19.
7. Krumbhaar, E. B., and Musser, J. H.: Jour. Exper. Med., 1914, xx, 108.

Karsner[8]) and in other blood diseases, but has been denied in some cases of pernicious anemia (Moffitt).

Whatever the cause of the improvement, it is highly probable that the subsequent deterioration is due to other related structures taking over the functions of the spleen (hemolymph nodes, accessory spleens, Kupfer cells in the liver, and perhaps ordinary lymph nodes), although here also no positive evidence has as yet been produced. Assuming that the cause of the disease has not been removed, the logical sequence would be that when these auxiliary organs have sufficiently developed, the interrupted course of the disease would be resumed.

As to the few patients who up to the present time have continued well after operation, if the curative action of splenectomy is denied, one must assume either that the causative factor has for reasons unknown ceased to operate, or that the auxiliary organs have failed to develop into pernicious activity.

INDICATIONS FOR SPLENECTOMY

In what cases of pernicious anemia, then, should splenectomy be undertaken? One of two lines may be followed, and it is as yet too early to say which, if either, is correct. If splenectomy merely induces a remission, and this is at present the opinion of the majority of observers, it should be logical to undertake

TABLE 6.—RESULTS ACCORDING TO SIZE OF SPLEEN, BASED ON EIGHTY-NINE CASES

Size of Spleen	Number of Cases	Postoperative Results			Subsequently Died
		Deaths	Not Improved	Improved	
Normal or diminished	28	9	5	14	8
Slightly enlarged	41	5	4	22	9
Considerable enlarged	20	1	1	18	3

it only as a last resort, when all other measures have proved unavailing, and only with the hope of prolonging life. Even under such limitations, however, the procedure has already proved its value, and in several cases moribund patients have been brought back to life of comparative well-being for many months. Assuming, on the other hand, that an occasional patient may be, for practical purposes, cured of the disease, and giving due weight to the view that greater and longer continued improvement is obtained if the operation is performed before the disease has reached its final stage, it would then be advisable to undertake it as soon as possible. Another factor that may prove to be decisive is whether or not increased hemolysis can be proved. In those cases with clinically enlarged spleens, icteroid appearance and increased urobilin output, without increased resistance of the erythrocytes, the prognosis is distinctly more favorable than in the opposite types. The condition of the bone marrow is also important, splenectomy being contraindicated if the bone marrow is persistently aplastic. It has also been a matter of clinical observation that those individuals in whom spinal cord symptoms have already developed are less apt to be helped by the operation.

CONCLUSIONS

1. Of the 153 patients studied, 19.6 per cent. died within six weeks; a distinct improvement in the clinical condition and in the blood picture occurred in 64.7 per cent., and no improvement in 15.7 per cent.

2. The rather high postoperative mortality (practically 20 per cent.) may be due to poor choice of cases in the early series. As a much greater proportion of the more recent cases has survived the operation, the true postoperative mortality is probably much less than 20 per cent.

3. Of the individuals who showed improvement shortly after operation, nearly two thirds of the total number, a large number have failed to maintain this improvement, or have since died in a relapse or from intercurrent disease.

4. Although a few have continued in good condition during the period of observation (over two years), in no case can it be said that a cure has been effected, and the blood of these individuals continues to show many of the characteristic signs of pernicious anemia.

5. On account of the improvement that follows splenectomy, it would appear to be not only a justifiable, but in many cases an advisable, procedure; but in no case should a cure be promised or the operation undertaken except under the most favorable conditions.

6. The best results are obtained if the operation is preceded by one or more transfusions, and those patients who relapse after operation may still be greatly helped by transfusion. Whether or not transfusions would have produced equally good results in the absence of splenectomy is a question that cannot at present be decided.

7. The most favorable results may be expected in individuals who have not passed the fifth decade, in whom the disease has not progressed for more than a year, and who have a relatively good blood picture, (that is, an anemia that is not of too extreme a degree or of the steady, progressive type). Individuals with enlarged spleens have done better than those in whom the spleen was small or of normal size, as have also those suffering from an anemia characterized by excessive hemolysis.

8. The opposite of these conditions should be considered as unfavorable factors, as should also the existence of spinal cord symptoms or the presence of an aplastic bone marrow.

8. Pearce, R. M., and Karsner, H.: Jour. Exper. Med., 1912, xvi, 769.

SPLENECTOMY IN SPLENIC ANEMIA, HEMOLYTIC ICTERUS AND HANOT'S CIRRHOSIS *

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The value of splenectomy in splenic anemia remains unquestioned, and since the first report by Banti in 1894 sufficient time has now elapsed to enable us to draw definite conclusions regarding not only the immediate success, but also the permanency, of the results. Within recent years two other conditions resembling in many clinical aspects splenic anemia have been relieved and probably permanently cured by splenectomy, namely, hemolytic icterus, both of the acquired and congenital type, and the hepatic cirrhosis of Hanot. These three conditions, splenic anemia, hemolytic icterus and the cirrhosis of Hanot, have many things in common and no doubt in the past have been frequently confused.

In all there is marked enlargement of the spleen, although the literature contains a few reports of

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apparently true hemolytic icterus without palpable splenic tumor. In all three conditions there is chronic anemia or chronic icterus, or both. Evidence of obstructive icterus is always lacking, and when jaundice is present the patients do not show certain toxic manifestations, as bradycardia and pruritus, so common in other forms of jaundice. While typical hemolytic crises occur in only hemolytic icterus, sudden, unaccountable increase in the anemia is not infrequent in Banti's disease. Hemolytic icterus often occurs in several members of a family and may be definitely hereditary. While familial cases are much less frequent in splenic anemia, they nevertheless occur; in fact, the Gaucher's type of splenomegaly, which must be classed with splenic anemia, quite frequently takes this form; and Brill, Bovaird Collier and others have reported two or more cases of splenic anemia in the same family, and White reports 104 cases of splenomegaly with anemia from South China, where he states the condition is common and is often a family disease. To show the close relation between these two conditions, Chauffard and Troisier report a case in which the mother of the patient had hemolytic icterus, the son had an enlarged spleen with anemia and no icterus, but with urobilin in the urine and lessened resistance of the red corpuscles. The writer recently saw an apparently typical case of hemolytic icterus, but without enlarged spleen, the patient reporting that his sister had a large spleen, which had been removed, but she had never suffered from icterus.

Chronic jaundice is constantly present in hemolytic icterus and Hanot's cirrhosis, but it is infrequent in splenic anemia. Osler reports its presence in only four of his twenty-six cases, and Griffin in two out of eighteen cases. Great enlargement of the liver is constantly present in Hanot's cirrhosis, and a very decided enlargement of the liver is not infrequent in hemolytic icterus. Osler, in sixteen cases of splenic anemia, reports moderate enlargement of the liver in six, and in one the liver was very decidedly enlarged.

The chief point of difference in these three conditions is the lowered resistance of the red corpuscles in hemolytic icterus. This finding, however, is not constant and its absence should not interfere with the diagnosis of hemolytic icterus in the presence of other evidence. Normal resistance of the erythrocytes has been reported in two cases by Hopkins, two by Lommell, one by Claus and Kalberlak, all of these being of the familial type. Morse reports two and Banti one of the acquired form. Türk states that in splenic anemia the resistance of the red corpuscles may be increased or diminished, and Eppinger reports three cases, all with increased resistance. In Hanot's cirrhosis, as in other forms of chronic icterus, the resistance of the red corpuscle is increased.

In hemolytic icterus bile is usually present in the blood, but there is no urobilin; while in the urine bile is absent except during hemolytic crises, but urobilin is present. This peculiar condition is not present in either of the other two diseases.

Secondary anemia of greater or less degree is characteristic of splenic anemia and hemolytic icterus, but is not present in Hanot's cirrhosis.

Urobilin in the stool, usually considered as an index of blood destruction, is greatly increased in hemolytic icterus. Eppinger believes that the amount present in the normal stool is from 0.12 to 0.15 gm., while in three patients with hemolytic icterus the amount varied from 2.25 to 3.8. Eppinger and Robertson have each determined the urobilin in the stool in Hanot's cirrhosis and they find it varies little from the normal. Eppinger has reported on two cases of Banti's disease, the amount of urobilin being 0.32 and 0.33 gm., respectively, a rather moderate increase above the normal and often reached in various conditions, as, for instance, in cardiac incompensation. That blood hemolysis is not especially important in splenic anemia is further supported by the relatively small amounts of iron found in the liver, spleen and kidneys in this condition. There is also no evidence that blood hemolysis is active in Hanot's cirrhosis, while in hemolytic icterus excessive blood destruction is very evident.

In these three conditions, which are in many ways so closely related, it is at present impossible to explain why in Hanot's cirrhosis there is icterus without anemia, in splenic anemia there is anemia without icterus, and in hemolytic icterus there are both icterus and anemia, although in many instances icterus is the dominant condition.

Splenic Anemia.—The majority of modern writers question whether we have in splenic anemia a disease entity. It is quite probable that in the past some patients with hemolytic icterus were diagnosed as having splenic anemia. It is also quite likely that at present splenomegaly of varied etiologic origin is included in this group. Banti's original definition included only those cases of anemia with enlarged spleen in which known etiologic causes could be excluded. It is not improbable that a chronic splenic tumor from any cause, especially if this enlargement is associated with great increase in the endothelial cells, which have been shown to have a marked erythrolytic activity, might give rise to chronic anemia. That in such cases splenectomy might be curative is also probable. Gaucher's splenomegaly may be given as a type of splenic anemia. Clinically, it conforms satisfactorily with our conception of splenic anemia. The histologic condition of the spleen, however, places it in a distinct class. Especially in children splenomegaly from syphilis with anemia may also be included, at least clinically, as splenic anemia. Chiari and Marchand report evidence of syphilis in some patients with clinically diagnosed splenic anemia coming to necropsy. Caronia applied the Wassermann test to the parents of thirty children with splenic anemia and reported it positive in nineteen. Curshmann reports the case of a patient with a history of hereditary syphilis who clinically had splenic anemia, recovery occurring after salvarsan. Mayo refers to three patients in whom syphilis may have been the cause.

In somewhat the same manner the enlarged spleen in a case of cured malaria might take on an increased erythrocytic function and thus give clinically a splenic anemia. Bey reports three cases, two corresponding to the first stage of Banti's and one to the third stage, that cleared up completely under quinin. In all of these there was a definite history of malaria. Thrombosis of the splenic or portal vein, with stenosis, may also give rise to clinical splenic anemia, as in the case reported by Warthin and Dock.

The classification of all splenic tumors with chronic anemia under the general head of splenic anemia may not be logical, but from a therapeutic point of view such a grouping may be desirable, as there is indisputable evidence that cure has been effected in the vast majority of patients clinically diagnosed as hav-

ing splenic anemia, on whom splenectomy was performed. Even when the disease had advanced to the point of marked hepatic cirrhosis and ascites, more or less complete return to normal has been reported.

The results of operative measures in the early stage of the disease are excellent. Griffin, from the Mayo Clinic, reports the cases of five patients, three with cirrhosis and ascites, and two in the preascitic stage of cirrhosis, on whom splenectomy was performed, and four of the five returned to normal health. One of these patients with ascites has been well seven years. In the Mayo series of eighteen patients, two died, or 11 per cent. Twelve of the sixteen recovering from the operation are now in excellent health (1915); two are definitely improved; one at first improved, later developed ascites and died, and one died two years after the operation, the cause of death not being determined. Some have advised against splenectomy during the ascitic stage, but the literature contains several reports, in addition to those already referred to, of the disappearance of ascites after splenectomy and the permanent cure of the patient. As operation is the only means that offers hopes of cure in this disease, it should be undertaken, provided the condition of the patient is not such as to make recovery from the operation improbable.

Regarding the mortality from splenectomy, the figures of Mayo have already been given, 11 per cent. in eighteen cases. This represents the lowest reported operative mortality in a relatively large series of cases. In the thirty-six cases reported by Banti, in which splenectomy was performed, the mortality was 44.4 per cent. Fifty-seven cases from various sources between 1900 and 1909 gave a mortality of 19 per cent., and in sixty-one cases reported since then the mortality was the same. This may probably be taken as the average mortality. In addition to the reported cures of splenic anemia by mercury and quinin, distinct benefit has been observed in a number of cases through the use of the Roentgen ray. There is no definite evidence, however, that any of these have been permanently cured.

Hemolytic Icterus.—Minkowski in 1900 was the first to describe this condition as a distinct disease. Appearing either as an acquired or familial condition, the first symptoms may develop either at birth or during early adult life. The characteristic symptoms, outside of its familial nature, are the chronic icterus of fluctuating intensity, combined as a rule with varying degrees of anemia; greatly enlarged spleen, often moderately enlarged liver, urobilin in the urine, but no bile except in some instances after a hemolytic crisis; the stools well colored, with no evidence of biliary intoxication, as pruritus and bradycardia, and the presence usually of a lowered resistance of the red corpuscles. The disturbed resistance of the erythrocyte, which has been considered so characteristic of this condition, is not always present. Banti, Claus, Morse, Lommell and Hopkins have reported cases of both the hereditary and acquired types with normal corpuscular resistance. Even absence of a splenic tumor has been observed by Banjamin and Sluker, Marchiafavas and Nazarios, and the writer has recently seen a case of this character.

As a rule the patient is little inconvenienced by his trouble, so that Türk has referred to it as a cosmetic disturbance, rather than a disease. Probably too much stress has been placed on the benign character of the trouble, as the majority of these patients suffer from anemia and consequent lowering of their efficiency. Especially following a hemolytic crises, the occurrence of which is so common in these cases, the degree of anemia may be so great as to temporarily incapacitate the individual. In a case recently observed the hemoglobin fell during a crisis from 85 to 40 per cent., the patient developed a temperature of 105 and for two days was delirious. It is true that the degree of inconvenience observed varies greatly; some are apparently not the least disturbed by their condition, others are always under par. Symptoms, when present, are due to the anemia, and not to the icterus. When considering the advisability of splenectomy, the degree of inconvenience caused by this trouble should be seriously considered, as the operation is attended with a certain amount of danger and should not be undertaken without definite indications.

The usual presence of lowered resistance of the erythrocytes and the relation of the spleen to this phenomenon stamp hemolytic icterus as having a probable etiologic relation to the spleen. The hemolytic function of the normal spleen was first described by Kolliker in 1847, and Balbi in 1893 reported that splenectomy increased the resistance of the red corpuscles. In 1895 Banti demonstrated that in dogs after splenectomy pyradin did not cause icterus. This work has been confirmed by a large number of observers — Pel, Paton and Goodall, Pearce, Heinz and others. It might be considered that as the normal spleen tends to lower the resistance of the erythrocyte to hemolytic agents, an enlarged or hyperfunctioning spleen might increase this tendency to such a degree that hemolysis would occur from a variety of mildly hemolytic agents normally present. It is possible in these cases, however, that the enlarged spleen may not be the cause of the disturbed resistance of the erythrocyte, as it is well established that this disturbed resistance is not always present. Furthermore, while as a rule the resistance of the corpuscles soon returns to normal after splenectomy, there are several cases on record in which this failed to take place. A notable case of this kind is seen in the patient operated on in 1887 by Sir Spencer Wells, in whom, as reported by Dawson, the red corpuscles still showed lessened resistance in 1914. Roth also reports a case in which three and one-half years after splenectomy the corpuscles hemolyzed in 0.6 per cent. salt solution. It is possible these patients may have developed accessory spleens. Küttner reports a case in which necropsy, made eleven years after splenectomy for gunshot wound, revealed the presence in the peritoneal cavity of eighty to one hundred spleens. Significant, however, is the fact that in spite of the disturbed resistance of the erythrocyte these patients after the splenectomy have remained well, showing that the spleen is responsible in some way for the hemolysis, even if not concerned in the lowered resistance of the red corpuscles.

Splenectomy is undoubtedly curative. Although Micheli in 1911 was the first to perform splenectomy in recognized hemolytic icterus, several patients wrongly diagnosed as having splenic anemia had been previously splenectomized with permanent cure. In this list might be mentioned Banti's case in 1904, Umber's in 1904, Burghard and Sutherland's in 1906, and Roth's in 1908. Since Micheli's case the number of reported splenectomies has grown rapidly. Elliott and Kanavel in 1915 collected in the literature forty-eight cases. The operative mortality in these forty-eight cases was only 4.1 per cent., surprisingly low.

The forty-six patients who recovered from the operation were cured. The jaundice rapidly disappeared, beginning within a few days, and as a rule being complete within two weeks. The recovery from the anemia was somewhat slower, but relatively rapid. The hemolytic crises ceased, although Elliott and Kanavel report a crisis in their patient fifteen days after splenectomy. As only five years have elapsed since Micheli's case, it might be said that time has been too short to insure permanency. In the list of permanent cures, however, may be included those cases already referred to in which splenectomy was performed under a different diagnosis. As none of these patients have relapsed, we are justified in saying the results are permanent.

Parisot and Huelly in 1913 report two cases of hemolytic icterus cured by the Roentgen ray; the permanency of these results cannot be confirmed. With our knowledge of this condition it is reasonable to believe that the Roentgen ray may be beneficial.

Hanot's Cirrhosis.—True Hanot's cirrhosis is a rare disease. Like splenic anemia, mistaken diagnoses are probably frequent. That it bears some resemblance to splenic anemia and hemolytic icterus must be admitted. For this reason it is not surprising that a cure should follow splenectomy. Eppinger in 1913 reported two patients cured and Mayo recently reported one. As far as I have been able to determine, these are the only reported cases. It would appear probable, however, that in Hanot's cirrhosis, a condition which has heretofore been considered incurable, splenectomy was indicated.[1]

THE RESULTS OF TREATMENT IN ARTERIAL HYPERTENSION DUE TO OR ASSOCIATED WITH SYPHILIS*

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The exact status of syphilis as a factor in the production of arterial hypertension is not yet settled, despite the general acceptation in medical literature of the view that syphilitic infections are not important in an etiologic sense. The prevailing view that this disease, so prone to attack the arterial wall, should be without effect on the blood pressure, is a teaching which cannot be considered as a closed chapter. Comparatively little has been written on this particular phase of hypertension, although it is mentioned as a possible cause by most writers on the subject. As early in 1901, Cautley[2] emphasized the absence of high blood pressure, as well as cardiac hypertrophy in syphilitic disease. Allbutt is equally emphatic in his belief that there is no important relation between syphilis and arterial hypertension. He says that he has seen high pressures in no case of syphilitic disease of the arteries unless there were renal or other complications. This assertion cannot be construed to mean that the hypertension might not be due to syphilis, because the renal or other complication may itself have been due to that disease. The mechanism which underlies the production of arterial hypertension is as yet so obscure that syphilis cannot be excluded until all the factors are known.

In order to determine the results of treatment in cases of hypertension due to or associated with syphilis, the writer has collected a group of eighteen patients who have been under observation sufficiently long to draw certain conclusions. The small group of patients which have been selected for this study are cases in which syphilis and hypertension are associated. It has not been assumed that because a patient with increased blood pressure has had an antecedent history of syphilis, that the latter infection stands in the relation of a causal factor to the former condition. In fact, it was not always possible to say that the syphilis preceded in point of time the increase in arterial pressure. In no case, however, has the syphilitic infection been definitely known to have followed the arterial hypertension. That is, no case is included in which a hypertensive patient is known to have been later infected with syphilis. Inasmuch as syphilis is a disease of early adult life, and hypertension a disease of a later period, it is probable that where the two are associated, the syphilis usually preceded the increase in pressure.

If syphilis cannot be said to be the causal factor in any of these eighteen patients, it cannot be said that any other infection, toxemia or condition can be so considered. The present state of our knowledge of the etiology of hypertension does not admit of an etiologic diagnosis in the great majority of cases. All the patients in this group had either a definite history of syphilis, a positive Wassermann, or sufficient evidence to be certain that syphilis existed. No attempt was made to select particular types of hypertensive disease. Some were cases of pure hypertension without demonstrable changes in the heart, kidneys or arteries. Others were associated with kidney or cerebral manifestations in various combinations. The essential requirements of case selection were, then, a definite history or proof of syphilis, and a condition of arterial hypertension.

The systolic pressure in each case selected was 170 mm. or higher. While it is doubtless true that a diastolic pressure of 100 mm. or higher means hypertension, regardless of the height of the systolic reading, in this group of patients the systolic pressure was taken as the measure of selection. Any group of patients so selected will show many types. In some of the patients there was demonstrable nephritis. This was evidenced by the urinary findings, retinal lesions, cardiac hypertrophy, and accentuation of the second aortic sound. In six of the patients, there was evident sclerosis of the radials and temporals. Four patients out of the eighteen showed involvement of the aortic ring, aortitis, aortic insufficiency, or aortic dilatation. In some of the patients there was a combination of kidney and arterial lesions. Four of the patients had no organic trouble which could be demonstrated by urinary findings, heart findings or arterial changes. This latter group would come under the heading of essential hypertension, or hyperpiesis. The one thing which all these patients had in common was a definite history of syphilis or a positive Wassermann, with or without a definite history. All of the patients were under observation for varying periods of time, in no case less than four months.

1. Those interested in consulting the literature on this subject will find a very complete bibliography on both splenic anemia and hemolytic icterus in the following articles:
Krumbhaar: Analysis of Clinical Types of Splenomegaly Accompanied by Anemia, Am. Jour. Med. Sc., 1915, cl, 227.
Elliott and Kanavel: Splenectomy for Hemolytic Icterus, Surg., Gynec. and Obst., 1915, xxi, 21.

* Read before the Section on Pharmacology and Therapeutics at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

2. Cautley: Lancet, London, April 6, 1901.

Each of the patients was subjected to antisyphilitic treatment, although not invariably to intensive treatment. Many of the patients had other conditions in a clinical way in addition to the hypertension, so that the latter alone was not always the direct cause or incentive to treatment.

The mercury injections used consisted of a mixture of equal parts by weight of lanolin and metallic mercury, of which mixture an amount was used to equal 1 grain of metallic mercury. As far as could be determined, the careful administration of mercury in these cases, in some for long periods, did not appear to damage the kidneys. In several of the patients albumin was first noted after the mercury had been started, but it does not at all follow from this that the mercury was the causal factor.

The association of arterial hypertension and syphilitic infections is of course a frequent one. It is at once evident that the association does not imply any essential relationship. An individual infected with syphilis may develop hypertension from the same causes and conditions which exist in nonsyphilitics. The great incidence of hypertension and also the great incidence of syphilis would lead, from the laws of chance alone, to the frequent association of the two conditions in the same individual.

It is not possible to give more than approximate figures concerning the frequency of syphilis in the community. It has been shown that about 20 per cent. of the patients admitted to the general hospitals in widely different parts of the country are infected with syphilis, as shown by a positive Wassermann. Figures so obtained are too low because many syphilitics (approximately one fourth) do not give a positive Wassermann. With such a large proportion of syphilitics in the community, it remains to consider what changes syphilis produces in the body which may be considered as possible factors in the production of hypertension.

Until the exact mechanism of arterial hypertension is disclosed, it is not possible to analyze with accuracy the pathologic changes due to syphilis in their relation to increased blood pressure. The conditions which have to be so analyzed are the question of arterial sclerosis, the irritability of the vasoconstrictor mechanism, toxic substances in the blood acting directly on the arterial wall, the all important renal element, and the cardiac factor.

Allbutt seems to have excluded syphilis as a possible factor in the production of hypertension, because cases of syphilitic arteritis were not associated with increased blood pressure. The anatomic changes produced by syphilis on the arterial wall have been well worked out. The period of time which intervenes between a syphilitic infection and definite changes in the walls of the blood vessels is difficult to determine, but certainly very variable. It may be well defined in two years, or delayed twenty or more years. There seems to be no fixed relationship between the actual presence of the spirochete in the arterial wall and the production of arteriosclerosis.

The condition of the smaller arteries plays an important part in the production of increased tension. About one third of all cases of well marked peripheral arteriosclerosis have normal or subnormal pressures. In the remaining two thirds the pressure is invariably increased, the exact degree depending on such other conditions as the kidney involvement, and the other factors mentioned above. The view that peripheral arteriosclerosis and cardiac hypertrophy are secondary to the hypertension has its supporters.

The relationship between syphilis and hypertension is bound up intimately with the question of the effect or changes produced in the kidney by syphilitic infections. The relationship between the kidney and hypertension is apparently a very close one, but by no means constant. Syphilis is not now considered as a common factor in the production of chronic nephritis, with or without hypertension. However, increasing numbers of cases are being reported where nephritis is definitely due to syphilis as shown by prompt improvement in all the manifestations after antisyphilitic treatment.

There is no definite way of saying whether abnormal urinary findings in a syphilitic are to be interpreted as evidences of kidney syphilis, or simply as an associated kidney lesion which happens to be present. The fact that such urinary findings in a syphilitic do not again become normal on syphilitic treatment is no reason why the lesion may not be due to syphilis. A kidney cell damaged by syphilis may be damaged as permanently as a spinal cord cell in tabes. The fact that such a spinal cord cell in tabes does not again functionate after treatment is not considered reason enough to doubt the nature of the disease process. A kidney cell damaged by syphilis may remain so in spite of all treatment.

In this series of cases, the urine was examined in all cases. Albumin or casts, or both, were found eleven times out of the eighteen. Detailed and systematic examinations of the urine will show casts or albumin in most cases of hypertension. The usual interpretation of such findings in hypertension is that it means the presence of nephritis. Necropsy might show an arteriosclerotic kidney or the so-called primary contracted kidney. On the other hand, there are cases of high blood pressure recorded where the necropsy showed normal anatomic findings, or only secondary congestion due to a failing heart.

The heart is the most important factor in the maintenance of normal blood pressure, because it is the chief source of energy necessary to keep up the circulation. For this reason, any abnormality of the heart may have some bearing on the question of hypertension. The heart is involved very often in syphilis, much more so in a pathologic sense than in a clinical sense. The cardiac involvement may be either congenital or acquired. The congenital type may be latent for an indefinite number of years and become active without apparent cause at any time. The spirochete may remain in the heart muscle and tissues for years or decades without the appearance of clinical manifestations. Such manifestations may, in fact, never appear. The spirochete has a special predilection for the heart muscle and aorta, and its presence in those tissues has been repeatedly demonstrated by Warthin, Benda, Reuta, Schmorl, Wright and Richardson, Longcope and others. Grassmann[3] found that two thirds of a series of 228 syphilitics had cardiac disturbances, such as arrhythmias, bradycardias, tachycardias, murmurs and dilatation.

The cardiovascular conditions produced by syphilis are very varied and include such conditions as myocarditis, aortic insufficiency, angina pectoris, aortitis and aneurysm. Such lesions are, of course, to be recognized by the clinical signs peculiar to each, but there is no typical cardiac symptom-complex due to syphilis.

3. Grassman: Deutsch. Arch. f. klin. Med., 1901, lxix, 281.

It is said that a cardiac first heart sound "without tone" has some value in suggesting a cardiac syphilis in a patient otherwise suspicious. This is too vague to be of value. Certainly the error in diagnosis must be very great if reliance is placed on the clinical history alone. Cardiac pain is suggestive of cardial syphilis. Stoll[3] ascribes these substernal pains to the almost invariable presence of syphilitic aortitis and periaortitis, to the fact that the aorta at its root is surrounded by rich ganglionic and nerve plexuses, and to the varying degree of aortic dilatability and pressure. The Wassermann may show whether the patient has syphilis, but not whether the particular lesion under consideration is syphilitic.

The possibility that there may be some chemical change in the blood in syphilis which has to do with vascular tone and hypertension is an interesting speculative question, but the writer knows of no work on this subject. In the same way, it has not been shown that the viscosity of the blood is increased in syphilis, thus increasing the resistance to its flow through the vessels, and consequently elevating the blood pressure.

Stoll believes that syphilis is a greater factor in the production of hypertensive arterial disease than is usually thought. Syphilis, in his estimation, is not to be considered to mean acquired cases only, but also those living in intimate relations with syphilitics, the congenital types, which are often unrecognized, and also those whose children exhibit the manifestations of hereditary syphilis. Stoll goes so far as to call hypertensive disease one of the most common of the so-called late manifestations of syphilis.

The effect of antisyphilitic treatment in cases of arterial hypertension is not easy to judge. In this series antisyphilitic treatment was associated in practically all cases with whatever else that was possible in the way of regulation of the diet, living habits, and the administration of vasodilators. Stoll says that "specific treatment has given very satisfactory results in a few cases of hypertension, for the most part individuals whose systolic pressures were over 200." There were three cases only in which a definite result may be said to have taken place following syphilitic treatment. Certainly these cases were striking, and do not appear to have been in the nature of coincidental results. All three of these cases had their positive Wassermanns turned negative. In all there were thirteen out of the eighteen patients who had positive Wassermanns at the start, and all but three of these changed to negative as a result of treatment. It is difficult to analyze the factors which go to make up a clinical improvement or change. All these patients had been advised to rest, the intestinal elimination was cared for, diet and living controlled, but these factors cannot be absolutely excluded in the analysis of the final result. It is not maintained that the drop in the blood pressures of these three cases was due to the syphilitic treatment alone, but that is the impression of the writer.

Salvarsan was administered in fourteen out of the eighteen patients one or more times. It is entirely unlikely that the fleeting effect of salvarsan on blood pressure could have entered in the question, because only more or less permanent ranges of blood pressure have been considered. Rolleston[5] has studied the effect of salvarsan on the blood pressure. It is very doubtful if syphilis is a factor in the results recorded by him. Rolleston says that the average of both systolic and diastolic pressures on the days after injection is generally lower than before. The fall of systolic pressure is slightly more marked than that of the diastolic pressure. The blood pressure seven hours after the injection of salvarsan is usually lower than it was before. During the actual intravenous injection of salvarsan, both the systolic and diastolic pressures are nearly always higher than on other occasions. This appears to be due to excitement. The general effect of intravenous injections of salvarsan is rather to lower, certainly not to increase arterial blood pressure. Rolleston kept his patients in bed after the injection, and this may have had some slight effect on his findings.

The clinical effects following the administration of vasodilators in this group of patients did not appear to be unusual.

4. Stoll: Am. Jour. Med. Sc., August, 1915.
5. Rolleston: British Med. Jour. Aug. 21, 1915.

REPORT OF CASES

A brief summary of the case histories of this group are here given. The first three histories are those in which a definite result seemed to follow treatment.

Case 1.—Lumber dealer, aged 57, weight 240 pounds. Syphilis at about 25 years of age. Treated two years at that time. No treatment since. For five years has had attacks of dizziness, headaches, and sometimes vomiting. Would become almost unconscious during severe attacks. Blood pressure ranged around 180 systolic and 100 diastolic. These attacks resisted all kinds of treatment from many hands. A Wassermann was made and found positive. Patient then admitted his old syphilis. Urine contains albumin and casts at almost every visit. Has had six injections of salvarsan and deep injections of mercury. After two months of such treatment, blood pressure fell to 135-140 systolic, and 95 diastolic. Has stayed at this lower point for five months now. Dizzy attacks disappeared, but still has some headaches, although much less severe. Considers himself remarkably improved. Wassermann negative five months after beginning of treatment. Albumin still present.

Case 2.—Railroad worker, aged 39. Distinct history of syphilis twelve years ago. Mercury by mouth and rubs at that time. Has a well defined systolic blow at the aortic area, and also a weaker diastolic murmur at the same place. Left heart border pushed to the left. Pulse approaches Corrigan type. Initial blood pressure, systolic 200, diastolic 105. Negative urine. Was given mercury injections for over one year. Wassermann originally positive and has remained so. Blood pressure has fallen to 155 systolic and 80 diastolic. Physical heart findings are the same. The peripheral arteries have been moderately sclerosed throughout.

Case 3.—Man, aged 47. Treated for syphilis twenty years ago. Wassermann positive. Blood pressure 220-126. Has signs of an old syphilis. Was given three injections of salvarsan and has rubbed mercury for six months. Albumin and casts are present. Pressure has fallen to range around 170-106. Urine still shows albumin and casts. Wassermann changed to negative. His original complaint of difficult breathing is better.

Case 4.—Man, cigar maker, aged 51. Admits an old syphilis. Blood pressure at beginning of observation 184-92. Seven months later 190-90. Wassermann at beginning four plus, but changed to two plus in seven months. Came for headaches. No definite lesions found. Urine normal. Was treated with mercury by mouth before coming under observation. Has had three injections of salvarsan and mercury injections since.

Case 5.—Foreman, structural steel worker, man, aged 46. Had a venereal lesion at 22, but no manifestations since. Wassermann positive when first seen. First blood pressure reading 224-125. Condition was found in the course of a routine examination for an acute bronchitis. No symptoms due to his hypertension. Was treated at the time of his first trouble, but not well. Was given salvarsan and mercury after coming under observation. Urine negative. After

nearly one year's treatment, blood pressure is still high, 210-122. Wassermann has become negative.

CASE 6.—Man, aged 55. Denied syphilis, but Wassermann was strongly positive. Came on account of pain in back, for which no definite cause was found. Blood pressure, 210-130. Urine negative. Examination did not reveal any demonstrable organic disease. Was given mercury injections and Wassermann became negative. Blood pressure did not fall and remained around 206-130.

CASE 7.—Man, aged 52, railway conductor. Indefinite history of venereal lesions. Treated with tablets sporadically for several years. Wassermann positive. Initial blood pressure, systolic 174, diastolic 90. No evidence of organic disease. Urine negative. Treated with salvarsan and mercury for eight months. Wassermann became negative but blood pressure range did not materially change.

CASE 8.—Man, aged 56, merchant. Admits gonorrheal discharge in the twenties, but denied chancre. Took medicine by mouth for venereal disease but does not know that it was for syphilis. Wassermann negative. Has distinct evidences of aortitis and disease at the aortic ring. Blood pressure, 196-90. Suffers from pains in left front chest. Has sugar in urine at times. Has had one injection of salvarsan and rubbed mercury for over one year. The range of the blood pressure has never been below 190 systolic and 85 diastolic. The chest pains are relieved entirely by theobromin sodium salicylate, and recur when it is stopped. Albumin and casts are present at times.

CASE 9.—Man, aged 36, distinct history of syphilis. Treated at various times during the last ten years. Temporal arteries tortuous. Aortitis. Blood pressure, 210-114. Has pains over the heart. No pains down left arm, but probably a true angina. Wassermann negative. Began mercury again and also was given three injections of salvarsan. Blood pressure has not dropped at any time below 200 systolic. Has casts in the urine.

CASE 10.—Man, aged 45. Well treated for syphilis about fifteen years ago. Wassermann positive. Has albumin and casts at times. Some dyspnea on exertion. Systolic murmur at aortic area. Radial arteries hard. Dizzy attacks sometimes. Has had four injections of neosalvarsan but no mercury. Has been on a careful regimen and restricted diet. Blood pressure, 218-120. No improvement in the pressure, but the condition has not become appreciably worse in five months.

CASE 11.—Man, aged 48. Syphilis at 26, supposedly cured. Wassermann positive and remained so. Blood pressure very high. Systolic 240, diastolic 170. Large amount of albumin and casts. Retinitis. Vision poor. Mercury guardedly on account of condition. No improvement in condition or blood pressure. Death from coma.

CASE 12.—Woman, aged 36. Obese, 185, albumin and casts. Shortness of breath, feeling of suffocation, headaches, and slight swelling of ankles. Wassermann positive. Husband known to have syphilis. Blood pressure, 210-105. Had three salvarsan injections and mercury by mouth account family reasons. Blood pressure after about one year's treatment, systolic 200, diastolic 110, Wassermann still positive. Albumin variable. Casts always to be found on careful search.

CASE 13.—Woman, wife of Patient 1. Intense headaches. Wassermann positive. Arteries hard at wrist and tortuous at temples. Blood pressure 194-108. Patient very nervous. Treated intensively with four injections of salvarsan and mercury for five months. Blood pressure then 185-105. Headaches better but not gone. Wassermann now weakly positive. Has had albumin found after being under treatment, which was not noted before.

CASE 14.—Man, farmer, aged 52. Had syphilis about thirty years ago. Treated intermittently during the two or three years following his infection. Arteries hard and visible. Large numbers of casts in the urine, and albumin at times. Second aortic sound accentuated. Left heart hypertrophied. Wassermann was not made when first seen. Has taken potassium iodid and mercuric chlorid to tolerance for nine months. Pupils are fixed, but no ataxia. Blood pressure at first 200-110. Lowest point reached was 190-110. Wassermann later found to be negative.

CASE 15.—Salesman, aged 50. Treated locally for venereal lesions at age of 31. Thinks that he had some medicine by mouth at that time, but is uncertain. Has digestive trouble and a strongly positive Wassermann. Blood pressure 206-116. Albumin and casts at times. Was put on mercury injections, but these were discontinued in four months when the patient left the city. Last pressure observation was systolic 210. Diastolic not recorded.

CASE 16.—Woman, aged 36. No history of syphilis, but father died in insane asylum, supposedly of paresis. Patient had attacks of vomiting without pain, suggestive of tabetic crises. Pupils reacted, but patellar reflex was absent. Blood Wassermann negative, spinal fluid Wassermann positive. Blood pressure 180-96. Treated with mercury injections. One injection of salvarsan. The attacks of vomiting stopped. Spinal fluid not again examined. Blood pressure after one year 192-100.

CASE 17.—Man, merchant, aged 41. Had syphilis at 22. Treated at that time. Later developed a low grade of fever and pain over the liver region. Wassermann positive. Blood pressure 196-90. Was treated with salvarsan and mercury injections for a period of over one year, and has been under observation for a longer period. Urine has had an occasional trace of albumin. Blood pressure has not appreciably changed under treatment. Abdominal pain and fever cleared up promptly under treatment.

CASE 18.—Man, aged 57. Had a thorough course of rubs for syphilis twenty-five years ago. Later developed skin lesions leaving scars on forearm. Has gastric disturbance, probably not directly related to his syphilis. Blood pressure 224-118. Wassermann positive. Treated with salvarsan and mercury injections. After four months, the pressure was 220-120. The Wassermann became negative.

COMMENT

It is seen from this small group of cases that a reduction in the blood pressure is not to be expected in syphilitics from antisyphilitic treatment. The writer feels, however, that when syphilis can be demonstrated in a patient with hypertensive cardiovascular disease, it should be treated. Such a procedure may in exceptional cases give very striking results. It may be emphasized again that there is nothing in such absence of therapeutic result to militate against the belief that syphilis is a more common cause of arterial hypertension than is usually recognized.

CONCLUSIONS

1. Antisyphilitic treatment is not to be expected to reduce high blood pressure in syphilitics who have also arterial hypertension.

2. Occasional reductions in the blood pressure in such cases do, however, take place.

3. The association of arterial hypertension with syphilis does not contraindicate the treatment of the latter.

4. The careful use of mercury and salvarsan has not had bad results on kidneys damaged by arterial disease.

421 Michigan Street.

Human Progress.—Our limited minds are confined in a limited world, with immeasurable space on all sides of us. Our brief days are as nothing compared with the inconceivable aeons of the past, and the prospect of illimitable ages to come. Both infinity and eternity are beyond our mental grasp. We know that we cannot hope to understand all the wonders of the universe; but, nevertheless, we may be full of hope for the future. Step by step we gain in knowledge, and with each step we acquire better opportunity for improving the lot of mankind, and for illuminating the dark places in our philosophy of nature.—T. W. Richards, Ideals of Chemical Investigation.

THE INTENSIVE TREATMENT OF SYPHILIS *

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The day of pills and drops in the treatment of syphilis has passed. The needle has taken their place, and injections, intramuscular and intravenous, are the order of the day.

Since the discovery of the *Spirochaeta pallida*, the goal in the treatment of syphilis has been the abolition of these organisms from the body as quickly as possible, and we now believe that whether or not this has been accomplished is best determined by a constantly negative Wassermann.

Two potent remedies in the treatment of this disease exist, mercury and the newer arsenicals, salvarsan and its allies. To these may be added iodin in some form.

The modus operandi of these drugs is, however, a moot point.

By the administration literally of millions of doses of salvarsan, all doubt as to its immediate effect on the lesions of syphilis, as well as on the Wassermann reaction, has vanished. Ehrlich[1] stated that while it was thought by some that the action of salvarsan is that of a stimulant to the formation of antibodies which in turn attack the spirochetes, such is not the case, but that salvarsan acts directly on the organisms through the agency of the so-called chemoreceptors.

This is probably true in the cases of mercury also. This drug in some form or other has been used in the treatment of syphilis, at least since the days of Fracastorius, and according to Buret,[2] by the Chinese 2,000 years ago. And long before the discovery of the *Spirochaeta pallida* it was thought that the beneficial effects of mercury were due to the parasiticidal effects of the drug on the hypothetic causative organism. Since Schaudinn's discovery, it has been shown[3] that the spirochetes of experimental syphilis in rabbits are killed by intravenous injections of mercuric chlorid, although the rabbits subsequently die of nephritis.

There is, however, abundant clinical evidence which shows that the lesions of syphilis are healed by the use of mercury, although considerable doubt concerning its efficacy, especially the salicylate, has recently developed following the publication of Nelson and Anderson's[4] paper on the effect on the Wassermann reaction of intramuscular injections of this preparation. These investigators showed in a series of fifty cases that the Wassermann was apparently uninfluenced by the intramuscular injection of the salicylate in sufficient quantity to keep the patient completely saturated with the drug.

The writer has been able to show that this does not apply, at least in all cases, to some of the soluble preparations of mercury, especially mercuric chlorid intravenously and mercuric benzoate intramuscularly. As I shall point out later, all my private patients are treated with both mercury and salvarsan, but as most of my clinic patients are unable to pay for the more expensive arsenical, they have received mercury alone. However, owing to the fact that the majority of such patients are not permanent residents in Hot Springs, but are here today and gone tomorrow, it is difficult to follow the cases for a sufficient length of time to draw definite conclusions. However, I have been able to follow a few cases long enough to reduce a four plus Wassermann to a negative which remained negative for periods ranging from one to six weeks with intramuscular injections of mercuric benzoate or intravenous injections of mercuric chlorid. When my series becomes sufficiently large it will be the subject of a future report.

In regard to iodin it is probably not a true spirocheticide, as Nichols[3] has shown that potassium iodid has little or no effect on the organisms of experimental syphilis in rabbits. There is, however, abundant clinical evidence to show that this drug does have a most beneficial effect on gummas, causing their absorption, as well as on syphilitic arteritis. It has been suggested that this action is due to the formation of a proteolytic ferment which has a selective action for the round cells of the gummas and the cellular exudate of the arteritis.

With the above cited evidence as to the efficacy of the three syphilitic remedies, the logical method of treating this disease is to administer mercury and salvarsan as intensively as the patient can tolerate in all cases, and iodin in some form where indicated. This treatment should be started as quickly as possible after a diagnosis of syphilis has been made.

The diagnosis of syphilitic chancre when other lesions are absent should never be made on clinical evidence alone. The finding of spirochetes in a suspicious lesion will of course clear up the diagnosis. If these organisms are not found, a Wassermann test should be made which, if positive, will be proof that the individual is syphilitic, although not necessarily proving the lesion a chancre. If the Wassermann is negative at this time a further search for spirochetes should be made and Wassermann tests performed at intervals of two or three days until positive evidence is obtained or until a sufficient length of time has elapsed to warrant a negative diagnosis to be made.

It is not within the scope of this paper to discuss the diagnosis of syphilis at other stages of the disease, but I do want to emphasize the importance of frequent Wassermann tests as a guide to treatment in all cases. As soon as a diagnosis of syphilis has been made, salvarsan should be administered by intravenous injection.

The urine of all patients should first be examined carefully for the presence of albumin and casts, and a phenolsulphonephthalein test performed to determine the functional capacity of the kidneys. When evidence of renal abnormalities is found, salvarsan should be administered with extreme caution. In cases with normal kidneys the average dose is 0.4 gm., although in small individuals the dose is less. It is given in fairly concentrated solution, that is, 10 c.c. for each 0.1 gm. of the drug. By this method two, three or four doses may be prepared at one time and administered in quick succession.

The water used is freshly distilled into sterile flasks and autoclaved with the apparatus. The patient is instructed to eat a light meal on the evening previous to administration, to take a mild purgative and to eat

* Read before the Section on Pharmacology and Therapeutics at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Ehrlich, Paul: Lancet, London, 1913, clxxxv, 445.
2. Buret: Syphilis in Ancient and Prehistoric Times, American Edition, Philadelphia, 1891, p. 61.
3. Nichols, H. J.: Further Observations on Certain Features of Experimental Syphilis and Yaws in the Rabbit, Jour. Exper. Med., 1911, xiv, 196.
4. Nelson, Kent, and Anderson, E. A.: The Use of Mercury Salicylate in Syphilis, The Journal A. M. A., Nov. 27, 1915, p. 1905.

no breakfast. The injections are made in the office, as a rule, and the patient cautioned to remain quietly in his room until the following morning and to eat only very sparingly.

Some writers have advocated a short course of mercurial treatment before the injection of salvarsan in cases of florid syphilis. This I think is a mistake, as I have found that even in these cases when the dosage is small very little reaction follows its administration.

The day following the first dose of salvarsan, mercurial injections are begun. For intramuscular injection I have found mercuric benzoate the best preparation. This salt is insoluble in water, but is soluble in sodium chlorid solution. The preparation I use is made as follows: Two and five-tenths gm. of chemically pure sodium chlorid are weighed out and placed in a 100 c.c. graduate flask. About 50 c.c. of distilled water are added and the salt dissolved. Two gm. of mercuric benzoate are now carefully weighed out and placed in the flask where it readily dissolves on vigorous shaking. The flask is now filled to the 100 c.c. mark with distilled water, and the solution filtered through paper. It will be seen that each cubic centimeter contains 0.02 gm. (⅓ grain) of the benzoate. The initial dose is 0.5 c.c., containing 0.01 gm. (⅙ grain), which is rapidly increased to 1 c.c. if no untoward symptoms result. The injections are made deep into the muscles of the gluteal region, and as a rule cause little or no pain.

There are certain patients, however, in which the pain is so great that it seems desirable to discontinue the intramuscular injections. In these cases intravenous injections are used. Formerly I employed the mercurialized serum which I have described,[5] later used a mercurialized serum prepared in a similar manner from ascitic or hydrocele fluid, but recently have employed the method described by Nixon.[6] However, instead of injecting the mercury simply dissolved in water as advocated by Nixon, the following method is employed: A 2 per cent. solution of mercuric chlorid is prepared. When an injection is to be made, a 20 c.c. Lüer syringe is filled to the 10 c.c. mark with sterile normal salt solution and the plunger removed. The dose of mercury is then measured with a graduated pipet and dropped into the barrel of the syringe. The plunger is replaced, the solution thoroughly mixed, and the air expelled. The needle is then inserted into a prominent vein at the elbow, and traction made on the plunger until 10 c.c. of blood have been withdrawn and mixed with the mercury solution, when the entire quantity of blood and mercury is reinjected. This method has proved very satisfactory in my hands, and in over fifty injections no phlebitis has resulted.

In those cases in which gummas or arteritis are present, potassium iodid is administered by mouth in rapidly increasing doses.

It is the opinion of the writer that all cases of syphilis of the central nervous system should have intraspinal medication. While it is true that in some cases of involvement of the central nervous system the patients do get well by other methods of treatment, there is no doubt that the improvement is greater and quicker when the intraspinal route is employed.

For intraspinal injection of salvarsan I employ a method which is a combination of the one described by Ogilvie[7] and the one described by Wile,[8] which is as follows: Ten c.c. of blood are withdrawn by venipuncture and centrifugalized at once. One c.c. of the clear serum is removed and placed in a sterile test tube.

The salvarsan is then prepared by dissolving in water, neutralizing and diluting so that each 0.1 gm. is diluted to 40 c.c. The dose required, usually 0.1 c.c. (0.25 mg.) is added to the serum and placed in a hemostat at 37.5 C. for forty-five minutes. It is then removed and placed in a water bath at 55 C. for thirty minutes.

The intraspinal injection should be made as soon as possible after the serum is prepared. With the patient lying on his right side near the edge of the bed or on an operating table, lumbar puncture is performed. The site of the puncture is painted with iodin and the skin infiltrated with a small quantity of sterile 5 per cent. novocain. When it is determined that the point of the needle is well within the subarachnoid space, the barrel of a 20 c.c. Lüer syringe is attached to the needle by means of about 25 cm. of rubber tubing. The syringe is now lowered below the level of the needle and the spinal fluid allowed to run into it. When about 15 c.c. have been collected, 1 to 2 c.c. of a 5 per cent. solution of novocain are added and thoroughly mixed with the fluid, which is then allowed to run back into the spinal canal by raising the syringe above the level of the needle.

After three minutes the fluid is again allowed to flow into the syringe, and the salvarsanized serum added, and injected in the same manner as described above.

Mercurialized serum for intraspinal injection is prepared by adding 1 c.c. of the 2 per cent. benzoate solution used for intramuscular injection to 2 c.c. of serum and placing in the water bath for thirty minutes at 55 C. It will be seen that the 3 c.c. of mercurialized serum contains 0.02 gm. (⅓ grain of mercury) and that 0.03 c.c. contains 2 mg. (1/30 grain). The latter is the usual dose and is injected in the same manner as the salvarsanized serum.

By using the novocain as described for both the salvarsanized serum and the mercurialized serum, the pains in the legs and back which so frequently follow these injections are eliminated to a great extent.

Aside from the specific medication it is of the utmost importance in the treatment of all cases of syphilis to look after the hygiene of the patient. The writer is of the opinion that hospitalization is very desirable for all cases of syphilis and almost essential for some cases, such as syphilis of the heart and syphilis of the central nervous system. At least the life of the syphilitic should be very regular; regular sleep, regular meals, a certain amount of regular exercise, depending on the case, should be insisted on. The use of alcohol should be totally interdicted, and tobacco should be reduced to a minimum. The syphilitic should be warned against sexual excesses, and of course while he is infective should not be allowed to indulge his sexual appetite under any circumstances.

A great deal has been written and said concerning the wonderful cures of syphilis which have been affected at the great watering places of the world, Aix-la-Chapelle in Europe and the Hot Springs of

5. Thompson, Loyd: The Intravenous Injection of Mercurialized Serum in Syphilis, THE JOURNAL A. M. A., May 1, 1915, p. 1471.
6. Nixon, P. L.: The Intravenous Use of Mercuric Chlorid, THE JOURNAL A. M. A., May 20, 1916, p. 1622.
7. Ogilvie, Hanson S.: The Intraspinal Treatment of Syphilis of the Central Nervous System with Salvarsanized Serum of Standard Strength, THE JOURNAL A. M. A., Nov. 28, 1914, p. 1936.
8. Wile, Udo J.: Jour. Lab. and Clin. Med., 1915, 1, 119.

Arkansas in this country. That the waters of these springs possess any specific value in the treatment of syphilis I do not believe. The benefits to be derived from a sojourn at these resorts are to be found in the pleasant surroundings, the outdoor exercise, the regularity of the treatment and the fact that the patient "makes a business of getting well." It is, however, a fact that most patients bathing daily in the waters of these springs can tolerate more mercury without untoward effects than those not bathing.

THE CURE OF SYPHILIS

When shall we discharge the syphilitic as cured? Certainly not as I saw one physician do with a patient whose body was almost entirely covered with a lenticular papular eruption, which, however, had faded somewhat during the course of six or eight injections of salvarsan. This patient was told that the organisms were all killed and that his eruption would soon entirely disappear — this also in the face of a constantly positive Wassermann.

The length of time over which treatment should be given naturally varies with the case. The first requisite, is, of course, a clinical cure. If a patient is seen when the chancre is the only evidence of the disease and the Wassermann is negative, the length of time for treatment must be more or less empiric. Probably, however, six to eight doses of salvarsan at weekly intervals with daily administrations of mercury either by intramuscular or intravenous injection pushed to the physiologic limit will in the vast majority of cases result in a cure.

In later cases in which the Wassermann is positive when treatment is begun, a constantly negative Wassermann must be obtained as well as a clinical cure. The Wassermann test is made at the time of each salvarsan injection, but in spite of a negative test occurring soon after beginning treatment, it is best to give most patients a "course" of eight or ten weekly injections of salvarsan with the mercury treatment, and of course potassium iodid if indicated. If the Wassermann remains positive, a rest of from four to six weeks should be taken, when the course should be repeated.

In syphilis of the central nervous system, intraspinal injections should be made at intervals of seven to ten days, and it is my custom to alternate salvarsanized serum with mercurialized serum. At the same time intravenous injections of salvarsan and either intravenous or intramuscular injections of mercury are given as in any other case of syphilis. If gummas exist or are suspected, potassium iodid in rapidly increasing doses is of value.

This treatment is continued until eight or ten intraspinal injections have been made. If the spinal fluid is still positive, the course should be repeated after six to eight weeks' rest.

In the so-called Wassermann-fast cases, that is, those cases in which the Wassermann remains positive in spite of three or four such courses as outlined above and in which there are no clinical evidences of the disease, it is well to give a course of three or four injections of salvarsan and the amount of mercury that can be administered during the period at least once a year.

SUMMARY

The writer is of the opinion that a patient should not be discharged as cured until the following conditions have been fulfilled:

1. A clinical cure.
2. A constantly negative Wassermann on the blood at frequent intervals for a period of two years following the last treatment.
3. A negative spinal fluid at periods of one and two years following the last treatment.

In cases which have shown involvement of the central nervous system and have been treated for such involvement, the spinal fluid should be examined and found negative at more frequent intervals. The Wassermann on the spinal fluid should be performed with large quantities, up to 2 c.c. Of course in tabes and in certain other cases of syphilis of the central nervous system where there has been destruction of tissue, it is impossible to restore that which has been destroyed, and certain symptoms such as ataxia, etc., may persist, even though the process be checked. In such cases we must rely on laboratory evidence for a standard of cure.

Dugan-Stuart Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LEVISON AND THOMPSON

DR. W. W. TOMPKINS, Charleston, W. Va.: I would like to ask Dr. Thompson one question and that is in regard to life insurance. A man presents himself having had an incubative period and being in the stage of the sore or chancre. A Wassermann proves negative; another taken in a short time proves negative, and still another after several weeks proves negative. The man goes on with his hygienic treatment and cleanliness. In answering to the life insurance examiner—had he syphilis or not? what shall he say? If a man has a chancre and there was an incubation period do you act on the incubative period and the character of the sore or do you act on the Wassermann result? In the treatment of syphilis either with your way or the iodids and mercury do you call these cases cured altogether or have they gone out only to return again?

DR. NOBLE P. BARNES, Washington, D. C.: We all realize we can get over the first stage and skip the second and reach the third. Wassermanns are not easily made and should be made carefully. When a patient comes to me and asks how long it will take for treatment I usually tell him the remainder of his life. After you have had treatment for three, six or nine months, depending on the individual and the case, you have a Wassermann made, and after another six months and then one about every two years for the remainder of your life to be safe. It is very important to tell these patients that they should be under observation for a long time. We used to think we cured syphilis but after blood tests were made we soon found out that very few cases, if any, were cured. I would like to have Dr. Thompson give us his opinion as to the value of salvarsan, neosalvarsan and sodium cacodylate. In the absence of some of these preparations I have been compelled to use the latter though I understand that experimentally it does not seem to have the properties of destroying the organisms; nevertheless I have seen secondary lesions clear up in ten days' time, clinically and symptomatically. I begin with three grains, the second day five, and so on every other day up to twenty and twenty-four grains of sodium cacodylate a day.

MR. F. I. LACHENBACH, San Francisco: The treatment of syphilis is coming to be an exact science. There appears little divergence of opinion in the use of the arsenicals. It is quite well established that salvarsan is probably the best therapeutic agent; neosalvarsan comes next, and then the cacodylates. In the use of the mercurials there is more variation of opinion. The benzoate has been little used in our locality. Bichlorid of mercury has been used quite extensively but the preparation of choice is probably gray oil which is a very fine suspension of mercury in oil. This preparation occurs in a concentration of 40 per cent. in which six grains of mercury are represented in one cubic

centimeter of suspension; 0.25 c.c. would contain about 1½ grains of mercury as metal. The dosage is from one to three grains, given intramuscularly about once a week. This is perhaps the most intensive mercurial treatment. The salicylate seems to have been discarded since some adverse reports have been made but is this not still a valuable preparation?

DR. A. G. SHORTLE, Albuquerque, N. M.: I have noted how many obscure cases diagnosed as tuberculosis, and which fail to respond to the ordinary methods of treatment, show a positive Wassermann reaction. We finally took fifty cases that did not give a history of syphilis and made Wassermanns. We got seven positives, so that it has become a routine procedure. We make Wassermanns of all the cases admitted and are finding 10 to 15 per cent. of positive cases of those not giving a history of syphilis.

DR. G. R. SATTERLEE, New York: In regard to Dr. Levison's remarks on blood pressure, it seems to me that the good effects he got in the lowering of the blood pressure in the cases of syphilis were due largely to the hygienic regimen that goes along with the treatment of syphilis. In connection with this I wish to cite a most interesting case—one of double aneurysm of the transverse arch and descending branch of the thoracic aorta. The patient had no knowledge of syphilis or even what he had. He was treated for pulmonary tuberculosis by seventeen different men and was sent away to different health resorts. The question of treatment came in when we made a diagnosis of aneurysm and considered giving mercury first, with the idea of fixing the spirochete before administering salvarsan. I started with salvarsan—and that was the time when they said that aneurysm was a contraindication to this treatment. The most remarkable occurrence happened in thirty-six hours—the man spoke, having previously lost the voice, and the blood rushed back into the left radial artery, the pulse of which had been obliterated before treatment. The principal treatment was mercury and iodid, and he has been able to go back to work in spite of this aneurysm. At first he had a blood pressure of 170; it is now 150. He has had 110 injections of mercury, and ninety grains of potassium iodid a day, for a period of four to five years with intermissions. I would like to ask Dr. Thompson the value of potassium iodid in the treatment of these cases, and the value of luetin in diagnosis. He spoke about giving salvarsan in cardiac and aortic cases. Our experience has been that with a very bad heart and aorta and syphilitic aortitis and myocarditis, in which we have given salvarsan, the patients improve for three or four weeks and then suddenly die with a dilated heart, etc.

DR. LOUIS A. LEVISON, Toledo, Ohio: In spite of the fact that the treatment of cases in which arterial hypertension and syphilis are associated has been followed by poor results, I believe that if syphilis can be demonstrated it should be treated. It does not at all follow that because the results of treatment are poor, syphilis may not be the cause of the trouble. It is true also in tabes and paresis that treatment may not be followed by good results, which fact does not lead to any question in regard to the nature of the trouble.

DR. LOYD THOMPSON, Hot Springs, Ark.: In regard to the question of diagnosis in life insurance and the chancre I do not believe we are justified in making a diagnosis of syphilis when the chancre is the only lesion present and without laboratory evidence, because so many lesions that are not syphilitic resemble the syphilitic chancre. In the vast majority of cases of chancre the organism can be found without difficulty, especially if the lesion has not been treated. I think that after you fail to find the organism, the Wassermann should be performed at frequent intervals, say two to three times a week for two or three weeks, and then once a week for two or three months to be certain the lesion is not syphilitic, because I believe that every case of syphilis which is not treated specifically will show a positive Wassermann. In regard to those cases treated by the old methods at Hot Springs, I cannot say positively because they have not been worked out scientifically. I believe that the cases treated by inunctions and potassium iodid would give positive Wassermann reactions. This treatment will not cure syphilis but only hold it in check. If the Wassermann is negative we may find positive evidence of it in the spinal fluid. Dr. Barnes mentioned the length of time for treatment and I think that in the majority of cases he is right when he says that the patient should be treated for the remainder of his life, especially in late cases, in the so-called tertiary period. In regard to the relative efficacy of salvarsan and neosalvarsan: Neosalvarsan I have used little because I believe it is not as efficacious as salvarsan. I think the consensus of opinion of the workers along this line is that the relative efficacy is about as two is to three, or in other words, about three times as much in quantity of the neosalvarsan to about two of the salvarsan. However, some of the army men—Nichols, I think—record neosalvarsan as considerably less efficacious—probably about seven to one. In regard to sodium cacodylate, I have had no experience with it. Heidingsfeld reported some work on sodium cacodylate in relation to the Wassermann test, but his work was not conclusive. In regard to the use of insoluble preparations of mercury I do not consider them as advisable and the only possible reason for their use is that they necessitate less frequent visits to the physician and that, of course, is an advantage in certain cases. The insoluble preparations are only given once or twice a week while the soluble preparations are given more frequently. There is danger, however, of the cumulative effect of the insoluble preparations, and sometimes we have deleterious effects due to this accumulation. Potassium iodid has a place in the therapy of syphilis in the treatment of cases in which we have gummas and also in cases of arthritis. We get clinical results with potassium iodid. It should be given in doses of 10 grains three times a day and increased 10 grains every ten days until the limit of tolerance is reached—sometimes as high as 900 grains a day. Luetin has its place rather in congenital syphilis than in the acquired form of the disease. We do know that it has been reported that potassium iodid has a distinct effect on the luetin—changing a negative into a positive reaction.

COMPLETE VOCATIONAL DISABILITY FROM MUSCULAR IMBALANCE OF THE EYES

LLOYD MILLS, M.D.
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The term "eye strain" is commonly used to imply merely the effect on the globe itself of an uncorrected error of refraction; but it is not generally recognized that eye strain is never functional, in the sense of a neurosis, and that the lack of correction of such an error, or its imperfect or inaccurate correction, often produces its most distressing effect through its action on the extrinsic muscles of the eyes. The amount of deviation which one eye may make from its fellow and still permit fusion of the images which reach the two eyes is so slight as not to be noted except by special tests. This, in fact, has been one of the great drawbacks to the early recognition and acceptance of the exact factors of the eye strain, for it seemed incredible that perfectly normal appearing eyes could be the source of symptoms ranging from vague discomfort while reading to disability of so severe a type as actually to force people to give up their vocations or to become semi-invalids for life.

The endeavor to focus irregular and distorted images clearly and simultaneously on similar parts of the two retinas, an act essential for that good fusion which controls the appreciation of our spatial relations, if long continued, invariably leads to uneven pulls of the external muscles of the eyes, which disturbs the nor-

mal balance and produces a vicious circle of excessive and vain waste of nervous impulses, further irregularities of muscle action and increasingly imperfect fusion and difficulty in seeing. Sight is the only special sense which we use constantly while awake, and the continued drain of nervous energy in these cases leads eventually to general nervousness, more or less constant headaches, especially of the "sick headache" type, to chronic spasm and tenderness of the muscles of the back of the neck and, after a variable time, to total inability to use the eyes for any manner of near work, save at the certain cost of intolerable headache, nausea, vomiting and finally of complete nervous breakdown.

It may appear singular that this disorder is almost limited to far-sighted eyes, until it is realized that only about 7 per cent. of eyes are normal, that most persons are farsighted by heredity and that the congenitally short eyeballs of the farsighted, very often further burdened by astigmatism, are never at rest during waking hours from their endeavor to bring images to a focus on the retinas, unless relieved by suitable correcting lenses. A mass of clinical evidence which is almost scientifically conclusive, further shows that this particular type of eye is peculiarly subject to cataract and to glaucoma, the lack of early and constant correction of the refractive error which causes the uninterrupted overwork of the ocular muscles leading to early sclerosis of the lens and to early fibrosis of the filtering or pressure-equalizing apparatus of the eyes, and thus to cataract or glaucoma, respectively. The overwhelming clinical evidence forces and justifies the conviction, therefore, that our efforts in preventing simple glaucoma and senile cataract must lie along the lines of the early diagnosis and complete correction of the refractive errors and accessory conditions which cause overwork and premature aging of the eyes. The field of service thus opened to ophthalmology is secondary in importance only to the admirable work being done in this specialty for the prevention of gonorrheal ophthalmia and its paragonorrheal relative, trachoma, and in the prevention of industrial injuries.

Few physicians realize the importance of the accurate fitting and adjustment of glasses, and usually the fact that the patient is wearing glasses is accepted as evidence that the eyes may be eliminated from the differential diagnosis, regardless of when or by whom the glasses were prescribed, or of the training or skill of the prescriber. It is no exaggeration to say that not more than one fourth of the glasses worn today are accurately fitted and adjusted, and it is a matter of daily experience to see instances in which the glasses not only do not correct, but actually add burden to the vision, excite faulty action of the muscles and not infrequently change cases of latent or incipient disorder of muscle action into conditions of almost intolerable suffering.

The modern scientific examination of the eyes is a matter of mathematical precision, combined with a distinct tinge of art. Carelessness, impatience and hurry have no place in this examination, and lead to disaster as certainly as does inadequate training. It includes an inquiry into the visual power of the eyes, singly and together, when at rest and when actively functionating. The effects of facial asymmetry and the relation of the eyes to the static posture of the rest of the body have to be considered, the near and distant limits of focusing power and the vertical and horizontal relations of the eyes when focusing near and distant objects must be determined. The combined adductive and abductive power of the eyes must be measured and the strength of pull of the separate muscles of each eye compared. A careful intra-ocular study concludes this routine examination, and no modern ophthalmologist would presume to prescribe a glass without the illumination given by the results of this intricate and painstaking investigation. Of his nonoperative work, the accurate fitting of glasses makes the most severe demands on the skill and patience of the ophthalmologist.

I have stated that the common predisposing cause of eyestrain is uncorrected farsightedness, usually combined with astigmatism. Not all patients with this form of refractive error have symptoms, however, and many persons with small errors go through life without discomfort.

An inquiry into the exciting causes of active trouble in the more than 600 cases which form the basis of this paper shows that the chief exciting cause has been excessive near work, either as a part of a vocation such as stenography, sewing, bookkeeping and study at school, or simple excessive reading for pleasure. In numerous cases the onset has been coincident with the climacteric, many of the headaches and other related symptoms of which are the direct result of the loss of elasticity of the lens and an ensuing change of muscular balance. Because of the more obvious psychologic and physiologic changes, the eyes have been ignored until intolerable symptoms have led to the belated call for relief. Numbers of patients blame the sharp, white California sunshine for their trouble, though these patients are nearly all blue-eyed, the blue iris protecting the depths of the eye insufficiently because of its congenital lack of pigment. In these cases frequently great relief follows the use of an appropriate tinted glass in combination with the necessary corrective treatment of the muscular condition. Intranasal disease, the general weakness of chronic disease, and the ocular stress of learning new and close vocations, where no close work has previously been done, have been exciting causes in many cases. It is of interest that the intense emotional and physical strain of active military duty has been responsible for thousands of cases of unsuspected errors of refraction and muscular disorder becoming manifest and troublesome during the present war.

To be specific, there are three common forms of muscle imbalance of the eyes. In the first, the tendency is to deviate up or down, in the second, the tendency to inward deviation is excessive, and the third group shows a corresponding tendency to outward deviation.

The cases of tendency to vertical deviation, unlike the lateral forms, are usually anatomic in origin, owing to one orbit or to one eye being placed higher than the other and are further unlike the lateral forms in being associated with no particular type of refractive error, though an error of some degree is practically always coincident. This form is usually congenital, though it may be the result of faulty postural conditions of the spine. The ability of the eyes to fuse images which tend to separate either up or down is very slight, and small muscular errors in these directions often lead to distressing nausea and vertigo and to double vision, or to vision which falls just short of being double, but which is so confusing that the patient cannot estimate vertical distance correctly and cannot be trusted to walk stairs, to step from curbings or to cross a crowded street with any hope of safety. In one

of our recent cases of this kind the patient had passed through the hands of several internists from whom she received unsuccessful treatment for various nervous symptoms, without relief. She finally submitted to an abdominal operation in the hope that by some obscure route this might relieve the headache and blurred vision, the almost choreic nervousness and groping mental state, which the belief of her relatives magnified into the initial stage of an insanity, a belief in which she privately concurred. Her physicians, disregarding the axiom that he who treats a case of recurrent headache without having the patient's refractive error and muscle balance investigated is as culpable as he who neglects the blood pressure in a case of nephritis, had passed over the question of the eyes because the patient was wearing glasses fitted by an optician some months previously. These were found to be grossly incorrect and relief of symptoms was obtained and has been maintained to the present time by correcting her considerable farsightedness and astigmatism and by incorporating into the glass a prism which displaced the image of the high left eye to the level of that of the right eye, thus permitting a normal fusion which had been denied her for years.

Any condition which disturbs the lateral balance of the eye muscles creates a tendency for the images of the two eyes to separate sideways or to cross one another. The strain produced in maintaining fusion under these conditions leads very quickly to eye tire, and to so-called "sick headaches" or "bilious attacks" and, if uncorrected, to various forms of physical incapacity.

The class of patients who develop headache while motoring, shopping and at moving pictures, those who become trainsick and to a certain extent those who are most susceptible to seasickness practically always show relative overaction of the adducting muscles, whereby any and every attempt to turn the eyes sideways to view the scenery or the attractions of the shop windows, or to follow the action of a moving picture, demands a strong neuromuscular effort which rapidly leads to ineffectual nystagmic movements, dizziness and nausea. These cases, if neglected, are often stubborn and demand patient and skilled care. At times they can be cured by fusion and other muscle-building exercises; in rare cases the use of a prism is justified, and in extreme cases the more or less complete division of one or both of the overacting muscles is necessary. The prevention lies in the early correction of the underlying refractive error.

I have seen this form of trouble so frequently associated with intranasal disease and have found the restoration to a normal balance so much simpler after relief of the nasal condition, that I am inclined to class the imbalance in such cases as irritative, in contrast to that form of imbalance, also so frequently associated with chronic nasal disease, but characterized by relatively feeble adductive power, in connection with nasal disease, which I hold to be a toxic, pseudoparalytic stage of the same disorder. This relationship, I believe, has never before been suggested.

The final class of cases having a real or relative weakness of the adducting muscles is that in which the vocational ability is most frequently and seriously interfered with. The lack of sufficient adducting power prevents close work being done with comfort for any continued length of time, and, if not recognized early enough, the condition drifts with more or less rapidity into a state in which all vocations demanding concentration on work close at hand must be given up. A study of over 200 cases in all stages of this type shows that this real vocational disability occurs among stenographers, students, teachers, bookkeepers, seamstresses and milliners especially, types of workers who can least well afford the disability from the economic standpoint. Many of these cases have passed through the care of one or more physicians, without reflecting much, if any, credit on the profession as a whole, and the remark of one man "I have been doctored for everything under the heavens and have at last thought of my eyes," is an illuminating and not uncommon tale.

The principles and details of treatment of these muscle faults are matters of dry technical knowledge not appropriate for discussion here. It is enough to know that these cases, when recognized sufficiently early, are capable of cure without operative procedure.

The main object of this paper is to impress the necessity for early recognition of these conditions, whereby an enormous amount of late surgery, of needless suffering and of economic waste shall be prevented.

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PAINLESS LABOR*

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The recent general agitation over the question of painless labor has accomplished much good in: (1) stimulating research into newer and even older methods of painless labor; (2) demonstrating that the use of some preparation of opium, intelligently administered, is not as dangerous to the unborn child as we have in the past supposed, and (3) emphasizing the baneful results of fear, pain and shock of labor on the present and subsequent mental and physical condition of the highly civilized neuropathic woman of the day.

Many, possibly the majority, of the upper, highly civilized class of women are physically and mentally unfit to suffer an approach to spontaneous labor, by reason of their low resistance to the shock of labor. Hence these women have pathologic labors — are themselves neuropathic.

Unless guarded from too much suffering by analgesia and anesthesia, or perhaps surgical means, women of this class experience a profound physical and psychic shock in their first confinements from which some never fully recover, or they readily succumb to some intercurrent condition, as proved by the numerous mental and physical wrecks dating from the birth of the first child.

Shock from pain of labor in the highly civilized neurotic woman must, moreover, be reckoned with in general childbed mortality. Painless labor in these cases is a life-saving measure. Shock produced by the first stage of labor in these patients is a fact, not a theory.

In the majority of primiparous labors, reflex spasm of the soft parts and spastic or functional rigidity are a cause of unnecessary suffering and delay in this stage. The problem before us, therefore, is the control of pain in the first and longest stage, which often lasts a day or more. Here lies the foundation for the solution of the whole problem of painless labor, the

* Read before the American Gynecological Society, Washington, D. C., May 11, 1916.

need for which has never been more urgent, and for which there is no ideal single method at present.

After the barrier of the cervix is removed and the case passes on into the expulsive stage, a much simpler condition presents itself. In skilful hands, surgical intervention with surgical anesthesia, if indicated, are always in order at this stage. Conditions will always arise, for example, in early rupture of the membranes, in which the necessity for painless labor will demand such surgical termination.

The only absolutely painless labor is one terminated by surgical means with complete anesthesia. The ideal narcotic, analgesic or anesthetic for painless labor should produce the anociassociation of surgical practice, namely, (1) the blocking of pain, fear, shock and reflex sympathetic factors, and (2) the removal of reflex spasm and its resulting spastic or functional rigidity of the birth canal.

The most satisfactory painless labor method of the moment combines opium and antispasmodics for the first stage, with possibly vapor narcosis toward the end of this stage and vapor analgesia and anesthesia for the first and terminal parts of the second stage, respectively. The narcosis aimed at should, until the perineal stage, be analgesic and not anesthetic in character. The narcosis may be obtained either by drugs or vapor. This is a difficult or impossible task unless one has had considerable experience.

A good physical and mental condition during pregnancy will bring about a more stable condition of the nerves and more vigorous and persistent expulsive forces in labor. The influence of Prochownick's diet on the size of the fetus must not be neglected in this connection.

Sleep contributes to the success of the early hours of the first stage.

Posture in the first or second stage does not materially affect the course of labor.

Suggestion and hypnotism could go no farther than the very early hours of the first stage. The same can be said of mild sedatives, including the bromids.

Alcohol, either combined with opium or not, is commonly self-administered for painless labor among certain classes. Amnesia and the elimination of spastic rigidity is produced by this drug.

Rectal gas and drug anesthesia are sometimes resorted to. Savitsky's method for the first stage consists of enemas of antipyrin and laudanum. The use of chloral hydrate in the same manner for spastic rigidity of the cervix is well known. I do not know of any advantage in the colonic absorption of ether, but there are possibilities in the oil-ether colonic anesthesia, if directed by a first-class anesthetist. We are experimenting in this field at present and I regret that I cannot report on the method.

The blocking of afferent impulses to the brain by spinal lumbar, nerve and nerve root anesthesia, and perineal infiltration secured by such drugs as cocain and novocain once promised a solution of the problem of painless labor. This promise, however, has not been fulfilled. We have had some experience with intraspinal injections, but have abandoned them because of the danger of headaches, vomiting and interference with uterine contractions. Some obstetricians have, however, developed a high degree of technic in this direction. The New York State Board of Health recently investigated a maternal death due to this method.

Nerve and nerve-root anesthesia and perineal infiltration call for an elaborate technic, and have not been generally taken up. The recent literature on these subjects is small and unconvincing.

Opium alone, or combined with scopolamin, chloral, atropin, the bromids, strychnin, caffein, and possibly gas analgesia is our mainstay for the first stage. It is narcotic and antispasmodic.

Our hesitation to employ opium in labor in the past has been uncalled for, the experience of the last few years demonstrating that opium in its action on the mother, and particularly the fetus, is harmless, when its administration is limited to the first stage and its action does not lap over to the expulsive stage.

With the two actions, narcotic and antispasmodic in view (even before the recent reintroduction of morphin and scopolamin) I have made it almost a routine practice in primiparous women, to give one or more doses of morphin, ¼ grain, with atropin, $\frac{1}{120}$ grain by needle, and 20 grains of chloral by mouth. Indeed, on one of our hospital services, this procedure is practically a routine in primiparous labors. The pain and distress is self-evident and we take for granted the spastic rigidity, whether or not found by palpation. This means that we employ the method in both the so-called higher and lower classes.

The results have been excellent, as we follow this treatment with vapor narcosis in the second stage and with surgical anesthesia, by chloroform, ether or nitrous oxid-oxygen for the perineal stage. Even huge doses of the bromids will not take the place of chloral hydrate for the foregoing purpose.

In prolonged first stages, the combination can be repeated to advantage, and, so far as we have observed, with safety to both mother and child, always excepting toxemia cases in which chloral as well as chloroform is prohibitory.

We usually obtain by these methods rest from pain for three hours or more, rest from fright and mental excitement, rest from shock-producing influences, and renewal of labor subsequently with increased resistance and a patient in improved physical and psychical condition to face the expulsive stage.

Whether the combination of morphin, atropin and chloral has a local action on the rigid muscle fibers, whether a functional motor paralysis or an anesthesia, does not always appear.

Numerous attempts have been made to combine sedatives and narcotics or give them in sequence. De Aragon of Havana has recently reported his experience in obstetric analgesia with a mixture of heroin, scopolamin, atropin and spartein. Some obstetricians do not use atropin or scopolamin without digitalis or strychnin.

The use of "obstetric" ether and chloroform is too well known to need comment. Both, in time, lessen the force of the contractions and thereby delay labor. Unlike nitrous oxid vapor, they possess no oxytoxic action. They are the pain controllers of the second stage, especially the perineal stage. To the old saying of "morphin for the first stage and chloroform for the second," we must today add nitrous oxid and oxygen for the second.

As an intermittent analgesic or anesthetic, the nitrous oxid-oxygen mixture is well adapted to the second stage. Webster and his associates have done much to make this method of painless labor popular. In the second stage, it does not interfere with uterine contractions as does ether and chloroform, but by

arresting pain prevents shock and exhaustion, and resistance not being lowered, the patient is the better able to withstand subsequent infection or complication. My experience has been limited entirely to its use in the second stage, and in all the mass of recent literature on the subject, I gather that it is of no value in the first stage, or else the authors avoid mention of its status in this stage.

In the hands of inexperienced hospital interns, our results with this method have been deplorable, if not dangerous to the patient. Under the management or supervision of a first-class anesthetist, the method works out most satisfactorily. We have experimented with three gas machines and have finally settled on a simple single bag instrument.

I dissent from the statement that the administration of nitrous oxid-oxygen is safe in unskilled hands. It is difficult to reconcile the statement of the recent advocates of nitrous oxid-oxygen analgesia and anesthesia, and the teachings of some of our most expert users of this gas combination. On the one hand, we are repeatedly told that the use of nitrous oxid and oxygen for analgesia and anesthesia is a simple matter for one to become proficient in after a few trials. On the other hand, we have the statement of perhaps the greatest authority on the use of nitrous oxid-oxygen in dental surgery:[1]

> I am not prepared to commend its use as an analgesic pure and simple, my own experience—comprising rather a long series of cases—being that whenever any part of the operation would really produce actual pain, the only method of eliminating shock is the induction of anesthesia. . . . Analgesia may be excellent in selected cases; we are perfectly willing to accept the statements of those who report this, but I should like to know whether or not, at critical moments during their operations, anesthesia is not induced. . . . A trained and experienced assistant should always be present. . . . *Nitrous oxid and oxygen in unskilled hands is more dangerous than either ether or chloroform.*

In other words, in analgesic work, there is danger that the patient coming out from under the influence of the gas may suffer from the effects of shock due to the acuteness of the suffering, or, on the other hand, the danger of anesthesia in the hands of the novice. Some of the best obstetricians are confessedly poor anesthetists.

SUMMARY

Nitrous oxid-oxygen analgesia or "obstetric" ether or chloroform for the second stage of labor pushed to anesthesia for the perineal stage and, possibly, forceps delivery with vapor anesthesia to eliminate part of the second stage is a satisfactory procedure.

Moreover, nitrous oxid-oxygen analgesia or anesthesia is superior to any other during labor, because of its oxytoxic action.

Eventually an established method of painless labor may be considered among public health questions.

Lessening or abolishing the pain of labor may in the future limit birth control and criminal abortion.

Drug addiction after a prolonged drug narcosis in the neuropathic is a possible contingency.

The dangers to the unborn or newly born child are negligible when drug narcosis is limited to the first stage of labor.

28 West Fifty-Sixth Street.

1. Hasbrouck, James F.: Transactions of the Dental Society of the State of New York, 1914, p. 164.

A CASE OF TESTICLE GRAFTING WITH UNEXPECTED RESULTS*

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At the age of 13 years the patient in the following case lost both testicles as a result of a complication of mumps. He retained almost no sexual characteristics, there being only slight, occasional evidence of activity of ganglia connected with the penis.

Last year it seemed desirable to try the effect of grafting testicle from another individual, with the object of obtaining the internal secretion with its accompanying cenesthesia of masculinity, but without any idea of securing any development of spermatozoa.

CASE REPORT

Mr. H., aged 27, entered the Post-Graduate Hospital a year ago. He was a man of mature and alert mentality for his age, and intellectually in every way quite normal. Physically he was somewhat undersized, with a face suggestive of youthfulness rather than of femininity. The voice was youthful.

At the time of the patient's entrance to the hospital the prostate gland was not observed to be present. The scrotum was shriveled and apparently quite empty of sex organs; the penis was small, the skin wrinkled, and the pubic hair sparse.

It was my intention to secure a testicle graft from a hernia patient of about the same age and color. This patient, however, made such a strong reaction to the von Pirquet test for tuberculosis that I decided not to make use of him, but secured a graft from another hernia patient 54 years of age who made negative response to the Wassermann and von Pirquet tests.

The graft as secured consisted of a wedge-shaped segment of testicle, which was sliced into three parts, each approximately 3 mm. in thickness. One of these slices was placed beneath the sheath of the left rectus abdominis muscle, another slice was placed beneath the right rectus abdominis sheath and the third slice was introduced into the right side of the scrotum, an incision having been made down to the remains of the testicle. There was barely a trace of the original testicle, epididymis and spermatic cord. Whatever remains of testicle were present would not exceed a number one shot in size. In the left scrotum was placed a Weir's celluloid testicle for the purpose of producing an effect of mass upon that side.

The patient did not observe any immediate effect from the testicle graft, and that portion which had been inserted in the right scrotum gradually began to undergo absorption. Curiously enough, as the graft began to disappear the vestige of the patient's testicle began to enlarge, and the testicle has now grown to become about one third normal size and is apparently still growing. It is softer than a normal testicle, but we may distinguish not only a growing testicle proper, but a growing epididymis and an enlarging spermatic cord upon that side.

In March of the present year it was decided to insert another graft for the purpose of hurrying matters along, and on this occasion opportunity was given for observing that the newly developed testicle appeared to be quite normal in contour, with normal appearing tunic and blood vessels. Coincidental with the development of the testicle, evidence of its presence became gradually more and more marked, to such a degree that the patient has recently asked if he might marry. The morning erections in particular are full and apparently normal and of frequent occurrence. The wrinkled appearance of the skin of the penis has changed to a normal smoothness, with increase in size of the organ. There is

* Read before the Surgical Section of the New York Academy of Medicine, May 15, 1916.

apparently a little line of prostatic tissue to be made out at the site of the prostate gland. As yet there has been no change in the voice.

The unique feature of this case, and the one which introduces perhaps an entirely new principle, is the fact of stimulation of the vestigial testicle into development. It is possible that this resource may be employed upon other patients who have lost testicles from mumps, and perhaps upon patients who have undescended testicles, after the latter have been placed in the scrotum by some operative procedure.

We are confronted with another question. Is it possible that in some cases of ovarian grafting the ova have been furnished, not by the graft, but by latent cell rests in the broad ligaments, which embryonic remains have been stimulated into activity through the influence of an ovarian graft in the vicinity. We know that such cell rests do occur, and Lucas-Championnière suggested this explanation for one of my cases of ovarian grafting in which the patient has borne two children. Opposed to this idea and confirming the theory that in some cases of ovarian grafting the graft may retain its full functioning identity, is the testimony from Harvard University Laboratory in connection with the ovarian crossing of guinea-pigs. Although both white and black colors appeared in the progeny after ovarian crossing in guinea-pigs, there still remains a question belonging to recessive and dominant characters.

For the most part we may assume that heteroplastic grafting of any sort will be followed by disappearance of engrafted tissue unless the physiologists of tomorrow are enabled to prepare individuals for accepting the tissue of other individuals. The very favorable reports of heteroplastic grafting made by Lydston and others leave us still with knowledge that heteroplastic grafting of tissues and of organs has not as yet been placed upon a satisfactory physiologic basis.

Two years ago I reported a case of testicle grafting[1] in a patient who had lost both testicles ten years previously as the result of an accident. For nearly ten years there had been no erection, and the patient had become corpulent and excessively nervous. The immediate effect of testicle grafting in this case was to restore him to a feeling of sexual manhood, which persisted for some months. A letter received from this patient on March 27 of the present year states that "the operation has entirely relieved the nervous symptoms, but the masculine effect was only temporary, as at present there is no indication that anything could be accomplished."

The new point introduced by the case of Mr. H., that of stimulation of latent cell rests into activity by a graft which itself disappears, would seem to open a vista which has not been anticipated.

In my own experimental work, both with ovarian and testicle grafting, patients have been given to understand that the procedures were wholly experimental in their nature. It is on this basis only that I have cared to assume the responsibilities of sex organ grafting.

616 Madison Avenue.

1. Morris, Robert T.: New York Med. Jour., Oct. 17, 1914.

Procrastination.—The world has ample knowledge of its perils, natural and created, but it remedies only on the heels of disaster and safeguards only after sacrifice.—D. C. Seitz.

LUMBAR PUNCTURE FOR THE RELIEF OF CONVULSIONS IN PUERPERAL ECLAMPSIA

REPORT OF TWO CASES

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Case 1.—A mulatto, aged 35, multipara, mother of five children, five and one-half months pregnant, had nineteen convulsions in twenty-one hours before I saw her, May 17, 1915. Her blood pressure, fifty minutes after convulsions, was 255. I bled her, drawing off 36 ounces of blood. The pressure was reduced to 190. She had passed urine just before the first convulsion, but none after. I catheterized her, obtaining 1 ounce of very dark urine, which solidified about one half on boiling. When I saw her a short time afterward, she had had the twenty-third convulsion, was in a state of coma, and showed no improvement.

On account of high blood pressure, I inserted the needle in the third lumbar interspace, and drew off 40 c.c. of slightly bloody fluid; no anesthetic was used. There was no evidence of pain, as the patient was in profound coma. The fluid flowed as if under pressure. On removal of needle, consciousness immediately returned. The patient at once drank freely of water. She had no more convulsions, and remained rational. Two hours later she voided 10 ounces of urine; three days later the urine was free from albumin, and the patient's condition was apparently normal. Magnesium sulphate was used as a purgative following the lumbar puncture.

June 17 following, she had a miscarriage; the child was dead. I did not see the patient at this time, but arrived after the delivery was completed. She had had no convulsions, nor any unusual symptoms of nervousness during the miscarriage; her health has remained good to the present time.

Case 2.—Sept. 1, 1915, I was called in consultation with Dr. W. L. F. Knolle to see Mrs. B., white, primipara, aged about 21, of German descent. Her family history was good. The patient gave a history of headache and diarrhea. Dr. Knolle had been called on account of the severe and frequent diarrhea at full term. The patient had had convulsions before he arrived, and had seven or eight before 11:30 a. m., the time of delivery with forceps. The child was alive.

The patient had a convulsion fifteen minutes after labor, one every one or two hours until 3 p. m. and then one every three hours until 3 a. m., September 2; between 3 and 4 a. m. she had four convulsions; between 4 and 5:30 she had four convulsions; at 5:30 she had two convulsions in the space of ten minutes; after that she had one every thirty minutes until 7:30 a. m., the time of operation. This made a total of more than twenty convulsions.

The cerebral excitement had been so severe all night that it required three or four attendants to control her. During the previous twenty-four hours she had been given saline purgatives, bromid, chloral hydrate, apomorphin, morphin and veratrum viride with no results. At 7 a. m. she was catheterized and 2 or 3 ounces of urine with considerable albumin were drawn off.

At 7:30 a. m. I made a lumbar puncture in the third lumbar interspace, and drew off 6 drams of clear fluid. The patient at once became quiet, and not another convulsion followed. At 9:30 a. m. she drank some water, at 11 a. m. voided urine in bed, showed evidence of return of consciousness, and took water freely. At 12 m. she was semiconscious. At 2 p. m. she voided 12 ounces of urine voluntarily. At 8 p. m. she was rational. She made an uneventful recovery.

I used lumbar puncture in both cases, because I had seen convulsions controlled in my cases of cerebrospinal meningitis only a few years before, by drawing the fluid from the spinal canal before injecting serum.

COMMENT

The high mortality, 35 per cent., is no argument against the usefulness of the treatment in proper cases. No treatment, undertaken as a last resort to save life, can have a brilliant record. A study of the various articles shows that not all cases have been reported; thus, a writer may say he has treated several cases, but may report only one. If these

unrecorded cases ended in recovery, the mortality would be somewhat lower.

Lumbar puncture is a treatment only for the convulsions of eclampsia, not of the toxemia of pregnancy. However, with the convulsions controlled, we are in a better position to treat the toxemia. Puncture seems to be indicated in those cases in which convulsions are severe and frequent. It does not, however, interfere with other forms of treatment for the disease.

A CASE OF PROGRESSIVE NEURAL MUSCULAR ATROPHY

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The following case is presented in order to add it to the number reported:

History.—C. J. H., a man, aged 24, was admitted to the United States Naval Hospital, Washington, D. C., Jan. 13, 1916. The family history was negative, except that one brother had had a "nervous" attack some years previously, but had been well since. The father, mother and one sister were living and well. No brothers or sisters were dead. There was no history of any nervous or muscular disease other than that noted of brother.

The patient's birth and development were normal. He learned to walk and talk at the usual age. He stated that he had had the ordinary diseases of childhood, from which he made good recoveries. His adolescence was uneventful. He enlisted in the United States Navy, Oct. 13, 1909, and served less than one year. Then while breaking up a box, a piece of tin struck him in the right eye, lacerating the cornea. This resulted in a cataract, which was needled, and he has about 9/20 vision. There were no complications or sequelae. This injury caused his discharge from the naval service, June 24, 1910. He returned to his home in New York state, and worked on the farm. The patient stated that he had always been strong and had done hard labor. He had always abstained from alcohol and denied all venereal disease.

Present Illness.—This began in the fall of 1911. At that time the patient noticed that both of his shoulders were suddenly affected with a peculiar sensation of weakness, and that he was scarcely able to raise his arms. He remembered having had much difficulty in placing the bedclothes over his shoulders; but he had perfect use of his hands. This condition gradually altered to a decided discomfort, but he felt no acute pain and did not notice any swelling. It was considered that his condition was "rheumatism," and also that he had sprained his shoulders. However, he had no recollection of injuring these or even of using them to excess. This attack lasted for about three months. He gradually regained his strength and felt as strong as ever. During a part of this time he was confined to bed, but was not seriously ill. He did not recall ever having had any fever or chills. During this attack no other muscles than those above the shoulders were involved.

The next attack came on gradually in August, 1913. This time both knees were involved. At first the patient noticed that they were weak and later that they were swollen. The muscles of his legs were sore, and the "cords" underneath the knees were tender. If he bent his knees he would sink to the floor and scarcely had strength enough to hold himself up. He noticed that while in bed and usually about 1 or 2 o'clock in the morning his legs would sweat rather freely. During this attack he was forced to use crutches for about three months. He was not confined to bed, but was able to lounge about the house. This attack lasted approximately six months. He apparently regained his former strength and was able to go on with his work. No other joints than the knees were involved during this attack.

The next attack began in May, 1914. The patient first noticed slight weakness in the legs. In about a month he was unable to walk at all, and in another month he noticed that the arms were becoming involved. At first they were weak and later on he was unable to use them at all. The wrists and elbow joints were affected and showed considerable swelling. The patient was unable to move his legs back of him, and when sitting down he could not raise his feet off of the floor. The calves of the legs became swollen and the hands showed a good deal of contraction. During the spring and early summer he was confined to bed. He was unable to care for himself and it was necessary for him to be fed. His condition gradually became worse until about the middle of July. After this he showed slight improvement, and gradually became better until he was able to go about on crutches. He states that his hands and wrists became "awfully hot." Between attacks and during them his general health has been good. He believes that he is worse before a storm, and that he is especially susceptible to cold. His only complaint at present is "occasional sharp pains running through his heart."

Examination.—The patient exhibited atrophy of the muscles of the legs, forearms and shoulder girdles, especially the deltoids, of the latter, more on the left than the right. The rest of the body seemed well nourished. The patient used crutches, and with their help was able to get about. He could stand alone, provided he flexed the knees somewhat. There was integrity of the muscles of the thighs, trunk and face. There was marked foot drop on both sides. The involvement of the muscles of the hands was very prominent and the appearance was characteristic, with wasting of the interossei and contractures. The patient was able to perform various coarse movements, such as feeding himself, but it required considerable effort and ingenuity to accomplish this. Ability for finer movements was lost.

Reflexes and Patellars: There was no movement of the legs, but there was some response of quadriceps tendons.

The Achilles tendon was absent on both sides. Plantars were absent, both toe and defense. The cremasteric reflexes were normal. The upper, middle and lower abdominal reflexes were normal. The triceps, biceps, ulnar and radial reflexes were slight, if present at all. Jaw response was absent. Masseteric response was absent. The muscles of the legs, arms and chest responded slightly and slowly to mechanical stimulation. When the muscles of the arms were struck repeatedly there was a persistent tremorlike movement.

Coordination Exercises: The knee-heel exercise was done on both sides, but slowly. The leg movements, anterior, in, up and down were good and equal. The arm movements, forward, backward, anterior, in and rotation were good and equal on both sides. The left foot was more difficult to move than the right.

Sensation: Light touch was apparently normal. Localization of light touch was good. On the right forearm the patient did not always distinguish sharp from blunt. In other segments the response was normal. On the feet he did not distinguish readily between heat and cold. On the hands he did not always distinguish heat from cold but was usually correct. The stereognostic sense was quite good.

The atrophied muscles showed a varying degree of reaction of degeneration, while the arm muscles, apparently not involved, showed a diminution of faradic response. The ophthalmologic examination was negative except for the residual of the injury mentioned.

There was no sphincter involvement. No mental symptoms were apparent. The patient, in spite of his difficulty, was quite cheerful and optimistic.

Laboratory Findings: Urine and blood were normal. Wassermann reaction was negative. The cerebrospinal fluid was clear in appearance. The pressure was 90 mm. of water. The Wassermann and Noguchi reactions were negative. The Nonne reaction was negative. One cell per cubic millimeter. Colloidal gold curve, 1, 1, 1, 1, 1, 0, 0, 0, 0, 0.

The patient remained in the hospital under observation until Feb. 4, 1916. During this time his condition did not change, except that he expressed himself as being more comfortable, which was no doubt due to his living under more favorable conditions than he did outside of the hospital. He returned to his home in New York state and reported by letter, April 1, 1916, that he seemed somewhat better.

Therapeutics

HYPERTENSION

(Continued from page 586)

SYMPTOMS

In hypertension, as long as the heart, which is probably hypertrophied, remains perfectly competent, there are few symptoms, and the person does not seek advice until he notices one or more of several possible conditions. He may be dizzy, his head may feel full and tight, he may have headaches, or he may have some cardiac pain or distress. Other persons do not seek advice until there is a slight weakening of the heart, showing the strain under which it is laboring. In most of these high tension cases, the patients have rather a slow heart, provided the heart is sufficient. Eyster and Hooker[52] found that the slowing of the heart in high blood pressure is due to action through the vagus nerves either from the inhibitory center in the medulla or reflexly by stimulation of the peripheral nerves of the vessels.

Another symptom for which the patient frequently seeks advice is that he is unable to relax from his business cares, when off duty. He also finds that he works at a higher tension, and that coffee and tea, alcohol and tobacco stimulate him more than usual. He sleeps restlessly, and dreams at night. He has an increased frequency of urination in the morning, especially after taking coffee, and sometimes gets up once or twice at night to urinate. He is irritable at times; short breathed on exertion, and sometimes has indigestion. He may have pains or aches in his heart. He may find that he dislikes to lie on his left side.

However much it may upset the patient and render him more nervous to inform him that his blood pressure is too high, it is necessary to give him this information. People now suspect the condition, and they frequently seek their physicians to determine if the blood pressure is too high and, from reading health journals, more or less realize some of the things, at least, that must be done to decrease the pressure. Consequently, the very things that are advised or ordered give the patient the diagnosis, whether he is told directly or not. Hence, we must talk freely with the patient, much as we do in heart defects, and get his cooperation, stating how frequent the condition is, how often it is readily improved, and how little it may interfere with long life.

Wiener and Wolfner[53] state that they have found with blood pressure that the pupils of the eyes are larger than normal, and that they readily contract to the stimulus of light, but immediately return to their previous size.

PROGNOSIS

Janeway[54] presented statistics of 458 patients with high blood pressure, 67 per cent. of whom were men. Of these 458 patients 212 had died, and he found that the women with high blood pressure lived longer than men with high blood pressure. They did not seem as likely to have apoplexy or cardiac failure. About 85 per cent. of high tension cases occur between the ages of 40 and 70.

While he believes that a systolic pressure of over 160 mm. is pathologic, he does not find that any definite prognostic conclusions can be drawn from the height of the pressure. Of course the most important concomitant symptoms of high pressure are cardiac, renal, and cerebral, and the typical headache, as he terms it, is a symptom of serious import. In considering headache in persons over 40, we must eliminate the eye headaches produced by the need of presbyopic glasses or by the need of stronger lenses, as this need is a frequent cause of headache. Dizziness and vertigo may occur without headache, and drowsiness, though not so frequent a symptom as insomnia, often occurs.

Janeway finds that all kinds of apoplectic attacks may occur from simple transient aphasia to complete hemiplegia, and thirteen of his patients who had died and thirteen of those living at the time of this report showed failure of eyesight as an initial symptom of arterial disease.

Janeway deplores the too frequent diagnosis of neurasthenia in these patients. This diagnosis probably accounts for the frequency with which neurasthenics have been said to have high blood pressure. Patients with high blood pressure may show all kinds of symptoms simulating neurasthenia, but hypertension is a much better diagnosis than neurasthenia for such patients, and will lead to more rational treatment.

Ninety-seven of these patients had hemorrhages somewhere, most frequently epistaxes, sometimes hemoptysis. Janeway did not find that purpuric spots on the skin occurred early in the disease in any of his patients.

Gastro-intestinal disturbances were not much in evidence unless the kidneys were insufficient. Intermittent claudication in the legs occasionally occurred. While angina pectoris and edema of the lungs were not infrequent causes of death in men, it was a rare cause of death in women. Dyspnea is a frequent symptom, and one for which many patients seek medical advice.

A constant systolic blood pressure of over 200 shows a probability that the patient will ultimately die either of uremia or of apoplexy. Janeway found that those patients who are to die from cardiac weakness show cardiac symptoms early in their disease. He found that rapid continuous loss of weight pointed to an early fatal termination.

Of the 212 patients who had died, seventy-one had shown cardiac insufficiency at the time of the first examination; twenty-one showed albumin or casts at that time. Of course it should be repeatedly emphasized that chronic interstitial nephritis may be in evidence with either albumin or casts alone, or without either being present.

Janeway sums up his conclusions by stating that "from the time of the development of symptoms indicative of cardiovascular or renal disease, four years will witness the death of half the men and five years of half the women. By the tenth year half the remainder will have died, leaving one fourth both of the men and the women who have lived beyond ten years." The causes of death he would place in the following order: gradual cardiac failure; uremia; apoplexy; some complicating acute infection; angina pectoris; accidental causes; acute edema of the lungs and cachexia. An early occurrence of myocardial weakness shows a 50 per cent. probability that death will be caused by cardiac insufficiency. Heart pains comprise another important indicator of future cardiac death, perhaps not an angina. Nocturnal polyuria would indicate a uremic death in about 50 per cent.

52. Eyster and Hooker: Am. Jour. Physiol., May, 1908.
53. Wiener, Meyer, and Wolfner, H. L.: A Reaction of the Pupil, Strongly Suggestive of Arteriosclerosis with Increased Blood Pressure, The Journal A. M. A., July 17, 1915, p. 214.
54. Janeway, T. C.: A Clinical Study of Hypertensive Cardiovascular Disease, Arch. Int. Med., December, 1913, p. 755.

of the patients, and typical headache or cerebral symptoms show the probability of uremic death in more than 50 per cent., and death from apoplexy in a large number of the other 50 per cent. As just stated, rapid loss of weight is a bad symptom.

Janeway[55] has previously reported seven patients with hypertension who had diabetes. Diabetes generally, on the other hand, causes a low blood pressure. Patients with this trouble and with hypertension, and without nephritis, probably have an increased secretion from the suprarenals.

We may sum up the prognosis in hypertension as follows: Hypertension alone is not of unfavorable omen; if it is not readily reduced by ordinary means, it is more serious. If associated with kidney, heart or liver defect, it is most serious. If there are such serious conditions as edema, ascites, lung congestion, cyanosis and great dyspnea, the prognosis is dire.

Obesity being a cause of high blood pressure, it should be treated more or less energetically, even if the individual does not continue to add weight.

Stone[56] believes that the higher the diastolic pressure the greater danger there is of cerebral death, while a patient with a very high systolic, but a diastolic pressure of 100 or lower, is in more danger of cardiac death. He urges a greater consideration of the pressure pulse in determining the load of the heart and the great danger from a sustained diastolic pressure of over 105 as sooner or later bound to cause myocardial symptoms. This load of the heart is also shown by an increased pulse rate and increased respiratory efforts. In cardiac failure, as the systolic pressure falls the diastolic is likely to be increased, and the pressure pulse thus diminishing, allows insufficient blood to go to the medullary centers, and death soon occurs. Therefore, in acute illnesses a sustained pressure pulse gives a better prognosis than a diminishing pressure pulse. The strenuous measures that should be used to lower a high diastolic pressure are contraindicated when the diastolic pressure is already low, even if the systolic pressure is high. If a high systolic pressure begins to fall more or less rapidly the heart shows fatigue, and should be stimulated by digitalis or strophanthin.

Rowan[57] finds that a diastolic reading of 100 mm. or more usually means that there is a narrowing of the lumen of the vessels, owing to stimulation of the vasoconstrictors, although it may mean the existence of a true arterial fibrosis. While a real atheroma generally causes a reduction in diastolic blood pressure, or at least but slight increase, he has found in syphilitic cases with arteriosclerosis a high diastolic pressure. If the blood pressure cannot be reduced by ordinary measures, arteriosclerosis is probably present. Several blood pressure examinations must be made, while the patient is being treated, to establish the diagnosis.

Rowan finds the reading of the pulse pressure to be of great importance, as this will indicate, sometimes before any other symptom is present, that the patient is either improving or doing badly, and it also aids in indicating the proper medicinal treatment.

In arteriosclerosis the systolic pressure may be high while the diastolic is low; hence there is a large pressure pulse. If the heart becomes weak the systolic pressure will drop, and any improvement caused, especially in aortic regurgitation, is by an increase of the systolic pressure.

Rowan finds, as has long been recognized, that a conclusion as to whether or not cerebral hemorrhage will occur cannot be made from the condition of the radial arteries, as patients with soft radials may suffer from cerebral hemorrhage, while those "with hard, sclerosed, pipestem-like arteries may live to a great age and die of anything rather than apoplexy."

Swan[58] has studied the blood pressure in fifty cases of disturbed thyroid, and finds that functional myocardial tests show that the myocardium is nearly always disturbed in these patients.

Before taking up the subject of treatment of high blood pressure, it may be suggested that a high diastolic pressure with a falling systolic pressure may require vasodilators on the one hand or cardiac tonics on the other, and sometimes the decision can be made only by proper tests. In other words, if the diastolic pressure is lowered the heart will be relieved. On the other hand, if the diastolic is being raised by an increased venous pressure from a failing heart, digitalis, strychnin and caffein may be of benefit in lowering the diastolic as well as raising the systolic. However, if there is a high systolic and a low diastolic pressure, vasodilators are often contraindicated.

(To be continued)

55. Janeway, T. C.: A Study of the Causes of Death in One Hundred Patients with High Blood Pressure, THE JOURNAL A. M. A., Dec. 14, 1912, p. 2106.

56. Stone, W. J.: The Differentiation of Cerebral and Cardiac Types of Hyperarterial Tension in Vascular Disease, Arch. Int. Med., November, 1915, p. 775.

57. Rowan, J. J.: The Practical Applications of Blood Pressure Findings, THE JOURNAL A. M. A., March 18, 1916, p. 873.

58. Swan: Interstate Med. Jour., March, 1916, p. 186.

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SATURDAY, SEPTEMBER 2, 1916

THE RELATION OF STABLE AIR TO SANITARY MILK

The summer season, with its incidence of gastro-intestinal disorders in milk-fed infants, and of milk-borne infectious disease, always serves to direct attention to the problems of the milk supply. Only a few years ago it was the chemical composition of the milk — its resemblance to or departure from the make-up of human milk — that formed a lively subject for debate. The ease with which cow's milk can be "modified" in percentage composition has eliminated some of the occasion for discussion of this theme. Later, the question of the existence of tuberculosis or other communicable disease in the dairy herds attracted notice. This is at length thoroughly understood, even if it is not yet fully controlled. More and more the center of interest is being narrowed to the bacterial contamination of milk.

The cow and the persons who handle milk have been taken into consideration as agencies in the transfer of bacteria to milk. But milk is inevitably exposed at some time to the air. In the belief that stable air in particular is a significant source of contamination, the regulators of modern dairy practice have formulated many rules designed to prevent the germs in this air from coming into contact with the milk. In view of the assumption that air pollution is one of the important sources of difficulty in the production of clean milk, it is essential to obtain reliable statistics on this topic. This does not imply that the subject is new or unexplored, but rather that, in the judgment of competent dairy bacteriologists, it has not been adequately attacked in the past.

For purposes of comparison it may be recalled that Winslow and Browne[1] found that the average number of bacteria per cubic foot (about 28 quarts) of country air was 56, for city street air 72, for offices 94, for factories 113, and for schools 96. Ruehle and Kulp[2] have ascertained that the number of bacteria found in the air of representative stables during such barn operations as milking, feeding hay, grain and the like, usually varies between 50 and 200 per liter (quart) of air. Occasionally much lower results were secured and also a few much higher, the high record being 825 per liter of air. When sterile water was "milked" in a representative stable from an apparatus designed to imitate the exposure of milk in this process in the dairy barn, the germ content of the liquid was found to average 12 per cubic centimeter, with a maximum of 73 and a usual range of from 5 to 15. When the same process was repeated under extreme dusty conditions it was possible to stir up several thousand bacteria per liter of air, so that the water acquired from 30 to 100 organisms per cubic centimeter. Milking under the worst of these conditions, the experimental observers tell us, would, as shown by the results where an artificial dust was raised, have added from 100 to 1,000 or more bacteria per cubic centimeter to the milk. On the other hand, under the conditions usually found in representative stables, the number of bacteria added to milk drawn would have been so few as to be undetectable by known methods of analysis.

In interpreting the importance of the air as a source of milk contamination, other possible sources, such as the interior of the udder, the cow's body, the milker's hands and clothes, and the condition of the utensils, must be kept in mind. According to Harding and Wilson,[3] an average of 500 bacteria per cubic centimeter may be expected in all milk as drawn from the udder. Under normal barn conditions the air contamination thus is even less than that from the udder, and both are small in comparison with that from unsterilized milk pails.

Our readers are aware that in drawing up rules for the production of sanitary milk, much emphasis has been placed on practices designed to control the amount of dust. The bacteriologic experts of the New York Experiment Station,[2] reviewing the quantitative facts now available on the subject, state that in no case have preconceived ideas regarding the effect of certain factors on the production of clean milk so overruled the results of actual observation as in this case. They add that dairymen and sanitarians who have been interested in the production of clean milk have been as badly misled as have surgeons and physicians. This was only natural because of the way in which our knowledge of air bacteria was developed. Bacteria do occur in the air of cow stables in relatively larger numbers than they do in the air of many other places. Occasionally under exceptionally dusty conditions, the number of bacteria getting into the milk from the air may be approximately as high as the number derived from the udder; but the number so derived under ordinary conditions does not increase the germ content of the milk

1. Winslow, C.-E. A., and Browne, W. W.: The Microbic Content of Indoor and Outdoor Air, Monthly Weather Review, 1914, xlii, 452.
2. Ruehle, G. L. A., and Kulp, W. A.: The Germ Content of Stable Air and Its Effect on the Germ Content of Milk, Bull. 409, New York Agric. Exp. Sta., 1915.
3. Harding, H. A., and Wilson, J. K.: A Study of the Udder Flora of Cows, Tech. Bull. 27, New York Agric. Exp. Sta., 1913.

to any important extent. Lest there be any misunderstanding, however, we must emphasize again the other highly significant sources of bacterial contamination of milk. The unsterilized milk pail,[4] frequently contributing many thousands of micro-organisms per cubic centimeter, affords an illustration of one remediable factor among several others beside stable dust.

RENAL GLYCOSURIA

The validity of the designation "renal diabetes" has repeatedly been called into question. The term was intended to be applied to a condition resulting in mild glycosuria but not accompanied by other characteristic symptoms of true diabetes mellitus, such as the presence of hyperglycemia and the impaired ability of the organism to utilize glucose. The relegation of the glycosuria to an increased permeability of the kidney for sugar, a condition experimentally attainable by the use of certain substances, notably phlorizin, must always be established beyond question by a demonstration that the blood sugar content is either somewhat low or, at any rate, never in any degree in excess of what might be expected under the dietary regimen prevailing, that is, between 0.07 and 0.11 per cent. So few of the alleged instances of renal diabetes have withstood the test of critical examination to demonstrate their right to be included in this category that some experts in the pathology of metabolism have seriously questioned whether the classification is justifiable. Less than ten years ago von Noorden pointed out that the entire clinical symptomatology of so-called renal diabetes was still to be ascertained; and in expressing doubt as to the individuality or identity of such a disease he designated the previous teachings about it as a *luftiges Kartenhaus*, an airy card castle.

Theoretically there is no serious reason for denying the possibility of a "renal glycosuria," inasmuch as an increased renal permeability has been shown to exist temporarily at times during pregnancy and after poisoning with certain drugs. Within the past decade, during which the technic of sugar estimation in the blood has reached a higher degree of perfection and comparative ease of application, a few cases have been reported which bear the evidence of meeting the standard set for justifying the designation of renal diabetes, or better, renal glycosuria. The instances are still rare enough to justify reference to fresh examples when these have been carefully studied by competent investigators. The newest case showing glycosuria, without the other abnormalities characteristic of impaired carbohydrate metabolism, is recorded by Lewis and Mosenthal[5] of the Medical Clinic at the Johns Hopkins Hospital. Here is their characterization of the anomaly: The slightly diminished phenolsulphonephthalein excretion, the slight elevation of Ambard's constant above the normal, as well as the glycosuria, point to a depressed kidney function. The absence of any further subjective or objective signs, past or present, leads to the conclusion that a renal glycosuria is an interesting anomaly, but of no importance as a whole.

An additional reason for calling widespread attention to such cases of glycosuria without hyperglycemia lies in the fact that almost none of them have been followed for any length of time, and consequently the prognosis remains to be ascertained. One naturally asks whether the defect is inherent or acquired, whether the impairment is permanent and unchanged, or progressively modified. Obviously at the present time the typical antidiabetic treatment is not indicated. It is not difficult to construct hypotheses as to the glycosuric manifestations which might be expected in suitable cases of varying renal involvement. At present the primary desideratum is a firmer structure of new facts referable to this category of disease.

THE HEART'S ACTION AT HIGH ALTITUDES

It is only a few years ago that it was customary to discuss the physiologic and pathologic phenomena associated with life and activity at high altitudes under the general designation of alpinism.[1] Although the Alps were the locality in which the earlier classic studies on the physiology of altitude were conducted, leading to the establishment of an international laboratory on Monte Rosa, the investigation of the numerous important problems which were suggested has been continued in other parts of the world in which the conduct of scientific researches at levels of low barometric pressure has become possible. In the United States, Pike's Peak in Colorado, with an altitude of more than 14,000 feet, has in recent years afforded splendid opportunities for the study of man at high altitudes. The summit is readily accessible without effort, the opportunities for residence and observation on the peak are acceptable, and at Colorado Springs, with an altitude of 6,000 feet, a base for the preparation and conduct of scientific operations is readily available. In addition to numerous less pretentious excursions to this locality, the Anglo-American Expedition of Douglas, Haldane, Henderson and Schneider[2] in 1912 deserves special mention. Since then, Schneider of Colorado College has added many facts to our knowledge of the circulation of the blood in man at high altitudes.[3]

1. See, for example, Cohnheim, O.: Physiologie des Alpinismus, Ergebn. d. Physiol., 1903, ii, i, 612.

2. Douglas, C. G.; Haldane, J.; Henderson, Y., and Schneider, E. C.: Phil. Tr. Roy. Soc. London, 1913, B, clii, 262. Anglo-American Expedition to Pike's Peak, editorial, THE JOURNAL A. M. A., Aug. 10, 1912, p. 449.

3. Schneider, E. C., and Sisco, D. L.: The Circulation of the Blood in Man at High Altitudes, I, Am. Jour. Physiol., 1914, xxxiv, 1; II, ibid., 1914, xxxiv, 29. The Influence of Altitude on the Blood, editorial, THE JOURNAL A. M. A., Nov. 1, 1913, p. 1634.

4. Prucha, M. J.; Harding, H. A., and Weeter, H. M.: Utensils as a Source of Bacterial Contamination of Milk, Science, 1915, xlii, 353.

5. Lewis, D. S., and Mosenthal, H. O.: Renal Diabetes, Bull. Johns Hopkins Hosp., 1916, xxvii, 133.

In addition to its intense scientific interest, the study of the effects of altitude on man can also claim certain immediate practical value. Residence in mountainous districts is a necessity for certain persons; transit through them is essential to others, while the unquestionable influence of altitude on the human organism, though it is still largely unanalyzed, has long been called on to exert therapeutic effects. It belongs within the domain of the uncertainties of so-called climatology.

Much is now definitely appreciated with respect to certain responses of the body to low barometric pressures, notably the change in the number of red corpuscles and other reactions of the hemopoietic system; more remains to be learned. The etiology of mountain sickness is not entirely cleared up, and the unlike responses of different persons to the same environment at high altitudes raises important questions. Recently Schneider[4] has compiled the results of new observations in a series of expeditions to Pike's Peak which show clearly that physical exertion makes greater demands on the heart and blood vessels at very high than at low altitudes. They also indicate that during the first days of residence at the high altitude, physical work should be reduced to a minimum. Schneider finds that the normal circulatory conditions for the majority of men at an altitude of 14,109 feet are an increased rate of the heart beat, an unchanged or slightly lowered arterial pressure, and a lowered venous pressure. Physical exertion, as at a low altitude, affects all three; the pulse rate is further accelerated, and the arterial and venous pressures are both raised; the change in each, however, is substantially greater at the high altitude. Furthermore, the stimulating influence of lowered barometric pressure is the more pronounced the more vigorous the exertion; that is to say, the curves representing the acceleration of the heart rate and the increase in pressures rise more rapidly than the curve which expresses the addition in rapidity or vigor of exertion. These facts clearly show that the heart and blood vessels, the arteries but not the veins, undergo a greater strain during exertion at the high altitude than they experience for the same form of exercise at the low altitude, in that the venous pressure rarely goes above the low altitude average. Furthermore, the heart undergoes greater strain during exercise at the high altitude, which is indicated in the longer after-period of high rate of beat and high pressures and also in the prolonged subnormal period of systolic pressure.

One may conclude from the observations made on Pike's Peak that a certain degree of acclimatization is possible; but the physical condition or previous training of the individual is of primary importance. Schneider points out that it would be an easy matter to injure the heart seriously during the early days of residence at high altitudes. The risk to the heart is less for men who are physically strong because of athletic training.

For those persons who are in excellent physical condition who have reacted well to the altitude, the changes of acclimatization will permit of moderate exertion without the lowered barometric pressure manifesting itself by the more pronounced acceleration of heart rate and an increased pressure. It seems probable that in vigorous work even those who are best adapted to the high altitude will continue to give a more pronounced reaction than would occur at a low altitude.

4. Schneider, E. C.: The Circulation of the Blood in Man at High Altitudes, III, The Effects of Physical Exertion on the Pulse Rate, Arterial and Venous Pressures, Am. Jour. Physiol., 1916, xl, 380.

THE NORMAL TOLERANCE FOR SUGAR

In recent years, functional tests by which it is intended to ascertain the capacity of the body as a whole, or of specific tissues and organs, to perform the physiologic tasks for which they are supposed to be equipped, have become more and more familiar in the routine of clinical diagnosis. Some of them, such as the phenolsulphonephthalein test for kidney function, have achieved a deserved popularity and widespread application, owing to the faithfulness with which they disclose the information which is sought. Not a few of the functional tests, particularly those applied to digestive or metabolic performances in the organism, have failed to meet the expectations of their sponsors. Some of the shortcomings in this direction have already been pointed out in THE JOURNAL.

In certain individuals the capacity of utilizing glucose is supposed to be lowered. It may become sufficiently deficient in some instances to lead to so-called alimentary glycosuria following an overindulgence in carbohydrate food. In a healthy person it is scarcely possible to produce glycosuria by the lavish administration of starchy food, since the liver can apparently store up the excess of sugar as fast as it is produced by the digestion of starch in the alimentary canal and absorbed into the portal circulation. There is a widespread belief that when preformed glucose is fed, however, the assimilation limit may be more readily reached through rapid and unduly large absorption of soluble carbohydrate. It may become very important to ascertain an incipient functional defect of this sort, since it may be the indication of some impending diabetic defect. Accordingly it has been customary in some clinical laboratories to ascertain the "assimilation limit" for glucose by feeding a measured quantity of this carbohydrate or some other sugar, such as lactose (milk sugar) or levulose (fruit sugar), at one time, and watching for a transient glycosuria as a result. To the examination of the urine for sugar before and after the administration of the carbohy-

drate, the analysis of the sugar content of the blood may now easily be added.

Success in ascertaining an abnormal tolerance in a procedure of the sort described evidently hinges on the ability to postulate what a normal functional capacity of a healthy individual in such circumstances should be. Lately it has been asserted that whereas the "assimilation limit" is low in diabetes, it is abnormally high in certain conditions involving a malfunction of some of the endocrine glands, notably the pituitary. Taylor and Hulton,[1] of the Department of Physiological Chemistry at the University of Pennsylvania, recently remarked that by common consent, rather than by accurate experimentation, the limit of assimilation of glucose on alimentary administration has been set at from 200 to 250 gm. on the empty stomach. From this figure downward the student of diabetes applies the test; from this figure upward the student of the diseases of the ductless glands applies the test. The Philadelphia investigators have made a number of observations on healthy medical students, to whom glucose was administered in strong solution and in whom the blood sugar content was ascertained immediately before and three hours after the sugar was given. As a result it is clear that nearly all the subjects tolerated the ingestion of 200 gm. without exhibition of glycosuria. Of nine subjects who ingested 300 gm., only three displayed glycosuria. Of the six who ingested 400 gm., only two had glycosuria. In five instances 500 gm. were given, with the production of glycosuria in but one. Taylor and Hulton regard 500 gm. as the physical limit of ingestion, except in one who has trained to the test; it is very large in bulk, inclines to nauseate, and apparently the excess is not rapidly absorbed, so that the test probably means no more than does the administration of 400 gm., which is usually tolerated. Polyuria occurred rarely, and there was no relationship between the polyuria and glycosuria. Intestinal disturbances were not observed. It appears, by way of contrast, that healthy persons cannot ingest 300 gm. of levulose without intestinal disturbances. Whether this result is inherent in such amounts of levulose, or is due to some impurity in the supposedly pure preparation used, could not be determined. The further general conclusion was drawn that even the larger quantities of sugar do not markedly influence the sugar content of the blood. In the majority of healthy adult males, according to Taylor and Hulton, there is, apparently, no limit of assimilation of glucose; a glycosuria does not regularly follow the largest possible ingestions of pure glucose.

Woodyatt, Sansum and Wilder[2] have very properly pointed out that the common clinical practice of estimating sugar tolerance as the number of grams of glucose which can be given by mouth all at once and just fail to cause glycosuria will not justify any tenable conclusion respecting the power to utilize glucose. They say:

> When sugars are administered by the stomach, the length of time during which they are actually brought to the cells must depend on the motor power of the stomach and of the bowel and on the rates at which the sugars can be absorbed; and even when they are given subcutaneously or by any other route which involves absorption as a prelude to their entering the blood, the rates at which they enter the blood will depend on the rates at which they are absorbed. By any of these, but especially by the oral method, the actual rate of entry of sugar into the blood and tissues at large must vary with a wide range of physical, physiologic and pathologic conditions over which we have no control; nor will it ever be possible by such methods to force sugar to enter the blood any faster than it can be absorbed. The rate of sugar absorption is a self-limited thing, for when a certain concentration of sugar is once present in the blood, no quantity given by mouth or subcutaneously or intraperitoneally can raise it higher.

The fact that prolonged hyperglycemia did not arise in Taylor and Hulton's trials on normal persons is in itself an indication that one could scarcely expect marked glycosuria to manifest itself. It has been found that a man weighing 70 kg., when resting quietly in bed, may receive and utilize 63 gm. of glucose by vein per hour without glycosuria. The normal tolerance limit for glucose, expressed as a velocity, is established at close to 0.85 gm. of glucose per kilogram of body weight hourly, which agrees approximately with what Blumenthal has established by repeated small intravenous injections in animals.[2] It can easily be computed from such statistics that if a man's resting requirement were 3,000 calories per day, he could thus receive double what he needed, or enough to cover the caloric expenditure of the same man during heavy physical exertion. In view of these facts perhaps the supposed increased "tolerance" for glucose in some of the ductless gland disorders relates to a gastrointestinal rather than a metabolic function.

1. Taylor, A. E., and Hulton, Florence: The Limit of Assimilation of Glucose, Jour. Biol. Chem., 1916, xxv, 173.
2. Woodyatt, R. T.; Sansum, W. D., and Wilder, R. M.: Prolonged and Accurately Timed Intravenous Injections of Sugar, THE JOURNAL A. M. A., Dec. 11, 1915, p. 2067.

Current Comment

CAUSES OF POLIOMYELITIS

"It's not the heat that makes you hot; it's the humidity," says Mr. Common Citizen as he stands before the weather department kiosk. The subject is one that baffles physiographers, physicians and physiologists. But what does he care? Mr. Common Citizen is a philosopher: he has a mind to think with; therefore he thinks. And lest these evanescent gems of thought should evolve fruitlessly, he utters them aloud and writes them for publication. An epidemic of disease such as infantile paralysis gives him a wonderful opportunity. Scientific investigators—those who have studied the subject—say that the cause is not

definitely known; that the method of transmission is not absolutely proved. With Mr. Common Citizen it is different; he knows all about it, and sends his views to the newspapers. If he has had a fragment of medical training, he may send his opinion to a medical journal. Usually his reasoning is easy to follow. For example, a Philadelphia author has observed that infantile paralysis occurs in hot weather; abates after a storm; is frequent among Italians; breaks out in New York; follows railroad traffic; ergo, it is due to constructing subways. The Italians dig the subways; the dust flies on their clothing; the dry weather makes things dusty; the Italians carry the dust home to their children.

Another comes from Newark. Says this contributor to the newspapers:

From my long experience as a member of one of the branches of medicine for the past thirty-one years, I have never heard or found any cure for a person who is suffering from hydro-cynic [sic] acid poisoning (prussic acid). In my opinion, the present cases of so-called infantile paralysis really are suffering from the poisonous hydro-cynic acid. You immediately will say, "How do young children become so saturated with this terrible poison?" Simply from the decomposed vegetable refuse, which is left lying in an uncovered condition in our streets. When this garbage lies in the sun and heat, uncovered, for three days before it is removed by the street cleaning department, as is the condition now existing in the city of Newark and in many of the surrounding towns, it naturally decays rapidly. With this decay comes a chemical action, and the portion of this refuse which is decaying takes the form of a poison gas—hydro-cynic acid. Our children and some of our adults breathe in this gas and if they are not of a healthy condition this acid begins its deadening work and the person is stricken with a sickness, infantile paralysis.

According to another newspaper item, an unorthodox theory has been advanced. It states that:

Dr. B. H. J., who is not a doctor of the orthodox school of medicine, is in this city to study the epidemic of infantile paralysis and advances the theory that poliomyelitis is not a germ disease at all and that it is neither contagious nor infectious.

Dr. J. who claims that he has been successful in treating a number of cases of infantile paralysis in Pittsburgh without the use of drugs, explained yesterday that he believed the cause of the disease lay in the intestinal tract of the child and that the fermentation of proteids and albumin there caused auto-intoxication and eventually paralysis of various muscles.

The following, by a physician, also deserves a place in this symposium:

While scientists are studying to issolate the specific germ and prepare a culter to treat the malady, there are thousands of victims dying, so it would appear the most important thing in the fight is to discover, if possible, a cure for the malady and let the discovery of the cause for less strenuous time. It has been suggested to me by many prominent physicians that I have two or three journals print my views at once so that my suggested treatment may be at once supplied. . . . My theory is that infantile paralysis is caused by a specific germ which germ up to the present day has not been successfully issolated. Now I contend that in every infection by this germ there is an inefficient amount of adrenalin in the blood current.

And the following also comes from a physician:

It is neither contagious or the work of the scape-goat germ, but is a destructive process resulting in extinct vitality. . . . If the organism is devitalized through a long line of indiscretions, its vitality will eventually become extinct as the consequence. Infantile paralysis is therefore caused by disorders of development or the falling short of maturity by arrest of development. . . . The Book of God—The Bible—has sounded the warning down the ages that in the last days of the dispensation of evil when the Lord God comes forth to harvest the earth of the crop grown, that He will march through the land in indignation and before Him will go the pestilence.

Certainly the following suggestion is scientific! It is from a New England physician:

Your attention must have been called to the prevalence of infantile paralysis and how the laboratory experts are at a loss because no monkeys are to be had. Let me say that my wife a few years ago fed her mother's house cat on oatmeal. Two litters of (6) kittens had kitten paralysis 50 per cent. The same cat fed on whole wheat had healthy litters. Now could not the American Medical Association . . . take this up and study the cases for poliomyelitis. It seems to me it ought.

The above quotations are offered as samples. There are many others: One suggests that the milk supply may be at fault (strange no one thought of that); another suggests that lake swimming has something to do with it; a "drugless physician" says that 85 per cent. of the cases are cholera infantum or "summer complaint." One physician writes to a Philadelphia newspaper that "foreign rats have the germ and that the flea is its vehicle of contamination." Dogs and cats, he says, are carriers and breeders of fleas, and if people will wash their dogs and cats with a mixture which he suggests, the epidemic will end. In the meantime, while theorists ponder and philosophers cogitate, health officers continue to do their best to prevent by rational methods the propagation of the disease, physicians at the bedside relieve suffering, and research workers spend days and nights in laboratories and postmortem rooms attempting to discover the etiology and mode of transmission of the disease.

THE U. S. PHARMACOPEIA IX

The ninth revision of the United States Pharmacopeia became official this week, Sept. 1, 1916. It is more fully reviewed on another page;[1] here we desire merely to call attention to two points: what the book is and what it is not. It is a book of standards for drugs; it is not a book of standard remedies. The Committee of Revision of the Pharmacopeia included physicians and pharmacists (retail, wholesale and manufacturing), but the pharmacists were in the majority and in control. The majority of the representatives of the medical profession on this committee would have preferred to see the bulk of the Pharmacopeia reduced and its value as a work of reference enhanced by the rejection of therapeutically worthless drugs. The representatives of commercial interests, on the other hand, argued that it was necessary for the Pharmacopeia to provide standards for drugs in more or less general use, whether worthless or otherwise. The force of this argument is somewhat impaired by the fact that the National Formulary,

1. See page 764, this issue.

which has also been made a book of legal standards, now includes individual drugs as well as combinations; the new edition of the Formulary, in fact, contains a large number of drugs which had been dropped from the U. S. Pharmacopeia VIII. The principle of making use the sole criterion for admission to the Pharmacopeia, however, on the whole carried the day. It has not been strictly observed; good results from the efforts of the medical contingent are to be observed here and there, as in the deletion of elixir of the phosphates of iron, quinin and strychnin and of emulsion of cod liver oil with hypophosphites. That these instances were not expressions of policy on the part of the Committee on Revision, but merely deviations from policy, may be seen by a glance at the contents of the new Pharmacopeia. These include substances which have been shown to be inert, like the hypophosphites[2] (calcium, potassium and sodium hypophosphites), complex and obsolete mixtures, like the compound syrup of sarsaparilla, and drugs which have been tried and found wanting, like saw palmetto berries. Even substances seldom used by the medical profession, but chiefly or altogether by the public, like sassafras, hops and peppermint (the herb), are standardized and made official. It seems difficult to discover any principle by which the sphere of the Pharmacopeia may be definitely marked off from that of the National Formulary. There is one great advantage in specifying U. S. P. drugs and preparations: Physicians who do so invoke legal standards of purity and identity. The only way to be sure of obtaining substances of therapeutic efficiency, however, is to exercise discrimination. The Pharmacopeia is no guide. Being prepared mainly by pharmacists to meet the needs of pharmacists, the Pharmacopeia of course contains much matter of little interest to physicians and entirely foreign to scientific medicine.

2. Marriott, W. McKim: The Therapeutic Value of the Hypophosphites, THE JOURNAL A. M. A., Feb. 12, 1916, p. 486.

THE CAUSE OF SEX

There is perhaps no process in life which excites more general interest than the causation of sex. It is generally believed that the sex is not established until after fertilization, and popular superstition in many communities abounds in methods of securing the desired sex. That sex is controlled by diet, as advocated by Schenk in 1897, has been a popular belief; but attempts to influence the sex of an embryo or larva by altered nutrition have been futile. It has been frequently observed that certain lots of insects poorly fed produce a greater number of males. This observation, however, is better explained by the fact that insect females, because of their higher rate of metabolism, succumb more easily in the absence of proper food supply than males. Another method of sex control is that advocated in 1909 by Russo, who asserted that by feeding or injecting lecithin in pregnant rabbits he was able to secure a greater percentage of females. No one has been able to confirm these results. It is only in recent years that a seemingly scientific basis for sex control has been found and experimentally tested in lower animal forms. Thus in dinophilus, a sea worm, Lenhossek[1] has shown that two types of ova are present, and that males and females are produced at will by fertilization of the proper type of ova. In some insects, Wilson[2] and others find different types of spermatozoa, and believe these to be the determining factors. Recently Loeb[3] has furnished additional evidence that sex is determined by the kind of sperm cell engaged in fertilization. Loeb, Delage and others have succeeded in producing larvae from unfertilized eggs. This was accomplished in eggs of sea urchins, starfish and annelid worms and mollusks by chemical stimulation. Guyer found that by injecting lymph into the unfertilized egg of the frog, development could be induced, and Bataillon later showed that the same process could be initiated by pricking the unfertilized egg with a needle. Loeb has succeeded in raising seven parthenogenetic frogs from unfertilized eggs stimulated by pricking. These frogs are now over a year old, and are normal in every respect as regards appearance and behavior. As two of the frogs recently died, their sex has been determined. This had been done on other parthenogenetic frogs, but the results were inconclusive, as the gonads of young frogs and tadpoles contain both sex elements. The four parthenogenetic frogs studied by Loeb were all males. Loeb concludes from this work that all eggs of the frog are alike, but that there are two kinds of spermatozoa, one with and one without a sex chromosome, and that if a spermatozoon of the former type enters an egg, a female is produced. Since in artificial parthenogenesis no sex chromosome is introduced, the parthenogenetic frog is a male. Further work is now started to determine whether the spermatozoa of parthenogenetic frogs can fertilize normal eggs, and no doubt much of interest will be learned from experiments of this nature.

1. Lenhossek, quoted by Morgan: Pop. Sc. Month., 1903, lxiv, 97.
2. Wilson: Science, 1909, p. 53.
3. Loeb: Proc. Nat. Acad. Sc., 1916, ii, 313.

NATURAL ICE

It is a common practice, especially in the field of organic chemistry, to purify substances from soluble impurities by freezing. As an example, chemically pure, or, as more commonly called, "glacial" acetic acid is the frozen portion from a concentrated mother liquor. It would be expected, therefore, that ice taken from moderately large streams or ponds which are not grossly polluted would be much superior to the water from which it is formed. Cummings[4] pointed out that not only is this the case, but also the number of bacteria is reduced by the freezing, and—of greater importance—the longer the ice is kept, the slighter the chances for the bacteria to survive. Natural ice should therefore be as good a product as artificial ice, if not better. The entire volume in artificial ice is generally frozen, which does not allow the impurities to be expelled, whereas in natural ice only a portion of the water is frozen. Natural ice is usu-

4. Cummings, H. S.: Safe Ice, Pub. Health Rep., Aug. 7, 1914, p. 2006. The Danger of Infection from Ice, editorial, THE JOURNAL A. M. A., Aug. 29, 1914, p. 786.

ally stored for a considerable time, while artificial ice is used shortly after manufacture. In this connection, the recent report of Edward Bartow[2] of the Illinois State Water Survey is interesting. Bartow has made a number of sanitary examinations of ice obtained from rivers and ponds in Illinois, and also, in some instances, of the water from which the ice was obtained. Out of forty-nine samples, he found that in only one ice did the turbidity exceed five parts per million, while the color of all the samples was so low that it could not be detected in an ordinary drinking glass. The highest total residue found in the ice examined was thirty-four parts per million, but in most samples, it was less than ten, which compares favorably with distilled water. Always of importance in water analysis is the chlorid content, as a relatively large amount indicates sewage. In the specimens of ice examined, only traces of chlorid were found. Of greater interest to the physician, however, is the fact that the bacterial content of the ice was greatly reduced in comparison with the number of bacteria in the water from which the ice had been frozen. In one case with 12,000 bacteria per cubic centimeter in the "raw" water, there were but 125 in the ice; 520 were reduced to 3; 1,400 to 16, etc., in every instance practically 99 per cent. reduction, which is better than that obtained from the average filtration plant. Gas-forming bacteria were greatly diminished. As Bartow states, "nature certainly does its share toward furnishing pure natural ice. If reasonable precautions are taken so that no ice is obtained from grossly polluted ponds or rivers, and the surface of the ice is protected, there need be no difficulty in placing pure ice on the market." Even though ice (natural or artificial) is pure, there still remains a great source of infection from improper delivery and handling. Care should be exercised that the ice and ice chest are washed with pure water, irrespective of whether the product is for an ice drink or used as a chilling agent for food.

THE "OPEN FORMULA" BUGBEAR

Slowly but surely the public is coming to realize that one of the most effective ways of discouraging fraud in the "patent medicine" business will be to demand that the names and quantities of the potent ingredients of all "patent medicines" be declared on the label. This is worrying the "patent medicine" fraternity. As one of their spokesmen has admitted, the publication of the essential ingredients in "patent medicines" would make it very difficult for the manufacturer to continue to make fraudulent claims for his product and "get away with it." Through their press agents, the nostrum makers are employing all the arts of sophistry to convince the public that nobody wants a declaration of the potent ingredients of "patent medicines" except the doctors, the jealous competitors of the "patent medicine" makers; that such a requirement would be confiscatory; that it would constitute a deprivation of property without due process of law, etc., *ad nauseam*. One of the publications devoted to "patent medicine" interests recently utilized much space in an effort to show that physicians, while in favor of "open formula" requirements when applied to "patent medicines," are opposed to any legislation that might require physicians to let their patients know the composition of the medicines prescribed. It probably is a fact that there are some physicians who honestly believe that there are certain instances in which it is against the best interests of the patient to let him know just what drugs are being prescribed. It is, at any rate, a debatable question. But the opinions held by physicians on this problem are entirely beside the point in discussing the "patent medicine" business. Like Mr. Gilbert's "flowers that bloom in the spring," it has nothing to do with the case! People who put themselves in the hands of physicians do so, presumably, in the belief that they, as laymen, do not consider themselves competent to diagnose and treat their own ailments. Then it is for the physician to decide what is the matter and what should be done for it; the responsibility rests on him. In the taking of "patent medicines" an entirely different element is introduced. Here the patient considers himself competent to diagnose and treat his own ailment; the responsibility is personal. Obviously, he should be permitted to know what he is going to pour down his own throat. No amount of fine spun casuistry can befog the fundamental fact that the prescriber of drugs should know what he is prescribing.

2. Bartow, Edward: Univ. Illinois Bull. 19, 1916, Water Survey Series No. 12.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. David A. Beattie has been appointed health officer of San Jose, succeeding Dr. Paul Sanford.——Dr. Alice Rhode has been appointed instructor in research medicine in the George Williams Hooper Foundation for Medical Research of the University of California.——The foundation has sent Dr. Ernest Linwood Walker, a member of its staff, to carry on investigations as to tropical diseases in the upper Amazon. He will be stationed for most of the year 1,500 miles up the river in the region of Porto Zelho, Rio Madeira, Amazon, Brazil. He has there the privileges of the hospital maintained by the Madeira Mamora Railroad, of which Dr. Allen M. Walker is chief surgeon.——Dr. Reginald Knight Smith has been appointed assistant clinical professor of obstetrics in the University of California Medical School.

GEORGIA

Conference on Charities and Correction.—A conference on charities and correction is to be held in Macon in October, immediately following the meeting of the State Federation of Women's Clubs. The Georgia Conference on Social Service was the name selected for the new organization.

Hospital Notes.—Work has been commenced on the new Macon City Hospital, and the contract states that it is to be completed within 240 working days. The contract price is $80,949. One of the new buildings is to be a five-story structure with a fresh air porch on each floor and a roof ward containing private rooms, the children's department,

the medical ward and operating rooms. The second building is the service building, and the third is a three-story structure containing an outpatient department, dispensary for whites and negroes, and on the two upper floors, wards and rooms for negro patients.——The annex of the new Columbus City Hospital is completed. The building is a two-story and basement structure, 40 by 50 feet, and has cost, with equipment, about $15,000. It will accomodate seventy-five patients, and will be used for incurable cases and communicable diseases.——A charter has been asked for the Frances Berrien Hospital, Rome. The incorporators are Drs. John T. McCall, Robert H. Wicker, John L. Garrard and Augustus F. Routledge.

ILLINOIS

Epidemic Dysentery.—An epidemic of bacillary dysentery has prevailed at Brereton where there have been thirty-two cases with eight deaths.

Note on Sanatoriums.—The matter of building county tuberculosis hospitals comes before the voters of Ogle, Adams, Morgan, Livingston, La Salle, Rock Island, Greene and Kane counties at the November elections.

New Bureau Begins Work.—The new sanitary engineering bureau of the state board of health has moved to Jacksonville from the University of Illinois, Urbana. Its principal activities are control over the installation of water supply and sewage systems; sanitary surveys; supervision of city waste collection and disposal, and street cleaning; examination of swamp and overflow lands within the state with a view of encouraging their reclamation for both health and profit; investigation of methods of heating and ventilating auditoriums; sanitary inspection of public school buildings; typhoid fever investigations; public addresses on sanitary engineering topics and informal advice by correspondence.

Personal.—Dr. Harry W. Ackmann, Rockford, has been appointed physician for the Rockford City Traction Company and the Rockford and Interurban Company, succeeding the late Dr. William R. Franklin.——Dr. John J. Fyke completed a half century of practice at Odin, August 24, and was presented with a silver loving cup.——Dr. George E. Bushnell, Rochelle, is ill at the Pennoyer Sanitarium, Kenosha, Wis.——Dr. Charles E. Crawford, Rockford, was elected physician of the grand lodge of the Order of Sons of St. George, at its annual meeting held in Waterloo, Iowa, recently.——Dr. S. W. Latham, Eldorado, at present a member of the state senate from the Fifty-First District, announces his candidacy for lieutenant governor of the state on the Republican ticket.

Chicago

Crile in Chicago.—Dr. George W. Crile, professor of surgery in the Western Reserve University, Cleveland, delivered a lecture on August 21, to the graduates of the medical department of the University of Illinois, on "Exhaustion and Restoration."

Not Augustana but Augustinian.—The report that the Augustana Hospital authorities are planning to erect new hospital buildings at Marquette Manor is incorrect. The work is being undertaken by the Augustinian Society of Illinois.

Personal.—Dr. Charles F. Lynch, Chicago, has been appointed city health officer of Lansing, Mich.——Dr. Willis O. Nance, who for six years has been alderman of the Sixth Ward in Chicago, is a Republican Candidate for Member of the Board of Trustees of the Sanitary District of Chicago.

Campaign Against Tuberculosis.—A city wide campaign against tuberculosis will begin September 15. The initial plans for the survey, to include eight square miles in the most congested part of the city, were completed at a meeting of the board of directors of the Municipal Tuberculosis Sanitarium, August 23. The district wherein the work is to be initiated extends from State Street to Ashland Avenue, and from North Avenue to Twenty-Second Street. About $20,000 will be spent on this survey, which will be in active charge of forty-two physicians and a necessary clerical force—the work being superintended by Drs. Thomas A. Hogan, John Ritter and Clarence J. Wheaton. It is expected the survey will be completed and a spot map prepared, showing every case of tuberculosis in the territory, and that this work will be accomplished by Jan. 1, 1917.

KENTUCKY

State Medical Society Changes Date of Meeting.—It is announced that the annual meeting of the Kentucky State Medical Association will be held at Hopkinsville, October 10-13, instead of October 17-20, as originally announced.

Personal.—Dr. Charles A. Edelen, Louisville, has been appointed chairman of the medical staff for the state fair for 1916, succeeding Dr. Irvin Lindenberger, who is in the state service at Fort Thomas.——Dr. Hervey S. Keller, Frankfort, has been appointed a member of the tuberculosis commission to succeed Charles A. Edelen, Louisville, resigned.——Dr. Urban V. Williams of Frankfort has resigned as a member of the state tuberculosis commission.——Dr. Milton Board, Louisville, has been elected medical examiner for the Workmen's Compensation Board.——Dr. Dunning S. Wilson, Louisville, has resigned as superintendent of the Waverly Hill Sanatorium, on account of his duties with the field hospital, Kentucky National Guard.——Dr. Frank G. Le Rue, Smithland, recently appointed superintendent of the Western State Hospital, Hopkinsville, has taken charge of the institution.——Dr. Henry P. Sights, formerly superintendent, has returned to his former home at Paducah and resumed practice.

MARYLAND

School Opening Delayed.—Health Commissioner Blake of the municipal health department, on August 23 issued an order forbidding the opening of the public and private schools of Baltimore until September 25.

City Playgrounds Closed by Dr. Blake.—Health Commissioner Blake ordered all children's public playgrounds closed, and children of all ages will be kept away from them until the fear of an epidemic of infantile paralysis has passed.

Soda Water Glasses to Be Abolished.—The state board of health, by advertisement, served notice on all druggists and dispensers of soft drinks that glasses in which they have been serving drinks to their customers must not be used after September 1 unless they are willing to destroy the glass after it has been used once.

Hopkins to Seek Causes of Infantile Paralysis.—An investigation is to be begun, August 25, by the Johns Hopkins Hospital into the causes and spread of infantile paralysis. The research will be conducted by the Department of Children of the Harriet Lane Home, and the Department of Pathology. Dr. Montrose T. Burrows of the Pathological Department and Dr. Kenneth D. Blackfan, resident pediatrician of the Harriet Lane Home, will have charge. A minute record is to be taken of the cases in the city and of the movements of the victims in the weeks previous to developing the paralysis.

MISSISSIPPI

Personal.—Dr. Gilbert F. Douglas, physician of the East Mississippi Insane Hospital, has resigned.

New Unit for Sanatorium.—A new unit is to be added to the Meridian Tuberculosis Hospital by Mr. A. J. Lyon, consisting of a cottage, to accommodate two patients, together with a common reception room.

Decision Against the State Board.—Chancellor O. B. Taylor, in the case of Dr. William T. Matthews, county health officer of Le Flore County, against the Mississippi State Board of Health, rendered a decision, July 22, that the state board of health cannot remove any officer from his position except in cases where he has been indicted and convicted in a court of law. The state board is said recently to have removed Dr. Matthews and to have appointed Dr. F. M. Santifer in his place. The charge against Dr. Matthews was that he failed to report a case of smallpox. Dr. Matthews claims that the charge was trivial and was trumped up for political purposes.——The report of the state board of health for June shows a marked increase in the cases of typhoid fever as compared with 1915, the respective figures being 533 and 819, and in malaria, of which 10,703 cases were reported in June, 1915, and 12,878 cases in June, 1916. The most marked decreases have been in amebic dysentery and pellagra.

NEW YORK

Amendment to Medical Practice Act.—The July *Bulletin of the Department of Health* gives a summary of an investigation conducted by the public health committee of the New York Academy of Medicine to ascertain the opinion of those in authority in the medical colleges of this state with reference to the desirability and practicability of amending the Medical Practice Act so that a fifth year as intern in a hospital shall be required of all applicants for a license to practice medicine in this state. A questionnaire was sent

to the ten medical colleges of the state and answers were received from nine. From the statistics available it is shown that a large proportion of the students of New York state secure hospital positions immediately after graduation; where they fail to do so the reason is usually due to their financial status. Information from the Department of Education shows that there is a sufficient number of internships in the state to provide for all graduates of medical schools. In 1914 there were 459 graduates and 859 internships. The attitude of the medical schools is unanimously favorable to the principle of requiring a year of hospital experience. Among the practical difficulties in the way of a realization of this ideal is the lack of standardization of hospitals. The difficulties in the way of this legislation have not been deemed insurmountable and an amendment has been submitted for approval to the faculties of the medical schools. All that have replied have endorsed the amendment except the New York Medical College and Hospital for Women. The Medical Society of the State of New York at its last annual meeting also approved of the amendment. The committee has finally adopted the proposal to amend the present public health law relative to the practice of medicine as follows:

Section 1. Subdivision 4 of Section 166 of Chapter 49 of the laws of 1909, entitled "An act in relation to the public health, constituting Chapter 45 of the consolidated laws," is hereby amended to read as follows:

"4. Has studied medicine not less than four school years, including four satisfactory courses of at least (seven) eight months each in four different calendar years in a medical school registered as maintaining at the time a standard satisfactory to the regents (.), and has performed satisfactory clinical work for a period of twelve months in a hospital which has a daily average of not less than thirty patients and has not less than fifty beds devoted to the treatment of medical and surgical diseases, and which is registered by the regents as maintaining at the time satisfactory clinical and laboratory standards. New York medical schools and New York medical students shall not be discriminated against by the registration of any medical schools out of the state whose minimum graduation standard is less than that fixed by statute for New York medical schools, etc."

New York City

Personal.—Dr. John Van der Poel sailed on the *Nieuw Amsterdam* for Rotterdam on August 25.——Dr. Charles G. Child, Jr., has resigned from the Woman's Hospital.

Age, Sex and Nativity of Poliomyelitis.—The weekly *Bulletin* of the department of health reproduces an interesting table showing the age and sex distribution of 848 fatal cases of infantile paralysis which occurred from January 1 to August 1. Only six of these deaths occurred previous to June 1. Of these deaths 507 were males and 431 females. The largest number of deaths occurred among those 2 years of age. The total number of deaths of those under 5 years of age was 419 males and 266 females. During the age period from 5 to 9 years there were 76 deaths of males and 60 of females. During the age period from 10 to 14 years there were only 17 deaths, 9 male and 8 female. There were only 10 deaths among the older age groups. There were only 5 deaths among colored children, 2 males and 3 females. The following table shows the nativity of the parents of the 848 fatal cases:

Both parents born in U. S.	..	253
Both parents born in Italy	177	..
Both parents born in Russia	115	..
Both parents born in Ireland	40	..
Both parents born in Austria-Hungary	39	..
Both parents born in Germany	23	..
Both parents born in other foreign countries	120	..
Total foreign	..	514
Mixed native and foreign	..	81

Infantile Paralysis.—On Friday, August 26, there were 94 new cases reported and 22 deaths. This is the lowest number reported for any Friday in August and for any day of the week. For the week ending August 19 the average number of cases reported daily was 130, while for the week ending August 26 it has been 108 cases. On August 25 there were 3,936 cases of infantile paralysis in the hospitals of the city. ——The brace fund of $15,000 which was originally asked for by Dr. Emerson has been completed, but it has been found that this sum will be inadequate to provide for all those needing orthopedic appliances and it is now announced that $26,000 will be required.——The Dispensary and Hospital for Deformities and Joint Diseases which has opened a special clinic for infantile paralysis cases is now making an appeal for a fund to be used in carrying on the work. ——Montefiore Home and Hospital announces that it has opened a ward for the treatment of children recovering from infantile paralysis.——It is said that about one third of the cases reported to the health department daily are not true cases of infantile paralysis; these, of course, do not appear in the daily lists. About two out of every 100 cases are diagnosed wrongly by the diagnosticians of the health department.——One of the features in connection with the work of prevention of infantile paralysis has been the issuing each day of "daily hints" for publication in the daily papers by the bureau of public health education of the health department.

PENNSYLVANIA

Personal.—Dr. Joseph K. Weaver, Norristown, has been reappointed a member of the state board of prison inspectors. ——Dr. William S. O'Neill Sherman, Pittsburgh, sailed from New York, July 8, for Liverpool to represent the United States Steel Corporation in the research work to be prosecuted by the Rockefeller Institute in the base and field hospitals of the allies.

Infantile Paralysis Report.—During the twenty-four hours ended 4 p. m., August 26, twenty-one new cases of infantile paralysis were reported to the state health department from points in Pennsylvania outside of Philadelphia. Since July 1, 674 cases of the disease have been reported to the state department. The total number of deaths is 168.——As a matter of precaution the board of health of Media has forbidden the appearance of the Chautauqua from September 14 to 20.——The Pennsylvania State College trustees have decided to postpone the opening of the college until September 18.

Pittsburgh Establishes Quarantine Against Poliomyelitis.—Beginning at midnight on August 17, the Pennsylvania department of health established at Pittsburgh a quarantine against all trains from the west, north and south making their first stop in the state at this point. All children under 16 bound for a Pennsylvania point not provided with health permits certifying that they were free from the disease and had not been exposed to it, will be turned back and deported beyond the state line. Seven fourth-year men of the medical school of the University of Pittsburgh have been selected as special quarantine officers.

Philadelphia

Personal.—Dr. Charles K. Mills has been appointed consulting neurologist to the Philadelphia Hospital for Contagious Diseases.——Dr. Holmes Walker has been provisionally appointed an assistant medical inspector at a salary of $1,400.

New Health Centers Opened.—The twelve centers which the department of health and charities established at the beginning of the summer have served their communities so well that three new centers have just been opened, located at Front and Tasker, at 1136 North Second Street and at 3101 Grays Ferry Road, where from seven to ten nurses are in charge.

Gift Toward Red Cross Hospital.—A fund of $25,000 is being collected for the purchase of a base hospital for the Red Cross and a cheque for $10,000 has been given by Cyrus H. K. Curtis to start the movement. The money for the hospital will be turned over to the Southeastern Chapter of the Red Cross and will be subject to the call of Dr. Richard H. Harte, the chairman. This base hospital will consist of tents, cots and full equipment for a central hospital to which cases may be moved from time to time from field hospitals or be held in readiness of great public calamities.

Jeanes Millions for University.—Recommendation that a fund of more than $3,000,000 for the treatment of cancerous, nervous and disabling ailments be given to the University of Pennsylvania Hospital has been made by Dr. Winford H. Smith, superintendent of the Johns Hopkins Hospital, Baltimore, who was selected by the trustees of the fund, jointly the incorporated trustees of the Philadelphia Yearly Meeting of Friends and a body organized as the board of managers of the Jeanes Hospital, to come to Philadelphia and make a survey of its hospitals and medical work and give them his opinion as to where the fortune would work the greatest benefit. The fund is the estate and its increment willed for the purpose by Anna J. Jeanes, a noted Friend philanthropist, who died in 1908.

Infantile Paralysis.—One hundred and thirty-two cases of infantile paralysis were reported to the bureau of health during the week which ended August 26, an increase of twenty-six over the preceding week. These cases are in widely scattered districts of the city.——Instructions for the injection of immune serum, with orders to use it on every child suspected of having infantile paralysis, if the consent of parents can be obtained, were sent on August 26, by Dr.

Andrew A. Cairns, chief medical inspector, to the fifty-one physicians under him, together with the statement that the serum would be available at his office. It will also be issued to physicians in general practice if they have paralysis patients under their care.——In just one week after the conference held at Dr. Wilmer Krusen's office in city hall on the use of the Wynnefield branch of the Childrens' Hospital for the care of convalescent patients, it was in operation with enough money to maintain it for one month. The Idlewild chapter of the Pennsylvania Women's Division for National Preparedness of the Red Cross at Media sent to this convalescent hospital 356 garments.——Aiding in the effort to stop the spread of infantile paralysis, the Child Federation has issued a bulletin and posted it in 300 courts and alleys which warns mothers to call the doctor the minute baby seems the least bit ill.——All public, private and parochial schools in this city and throughout the state will remain closed until September 18.——Eleven deaths from infantile paralysis, the largest number on any day this summer, were reported to the health department on August 19. In the week ending at noon August 19, 102 new cases were reported, twenty more than in the preceding week. This number makes a total of 280 cases and seventy-seven deaths. The demand for health certificates is so great that a force of eighteen clerks is kept busy at the City Hall and it is estimated that 10,000 certificates were issued on August 19.——Dr. Samuel S. Woody, chief resident physician at the Philadelphia Hospital for Contagious Diseases, has reported to Dr. Andrew A. Cairns that the cases recently admitted were of increasingly virulent type.——Dr. Wilmer Krusen has requested the Philadelphia Free Library to prohibit children from reading in the library and its branches, and has requested the Philadelphia Rapid Transit Company to take extra care in cleaning its cars for the rest of the summer. Churches and Sunday schools will exclude children under 16 in accordance with the request of the health director, and a police order was issued on August 17 prohibiting all street carnivals.——The board of managers of the Children's Hospital has offered its building at Wynnefield for a convalescents' hospital, planned by the Emergency Aid and Director Krusen.

CANADA

Alberta Physicians to Meet.—The annual meeting of the Alberta Medical Society will take place in Edmonton on September 21 and 22. The president is Dr. Thomas H. Whitelaw, Edmonton.

Medical Society of Nova Scotia.—The sixty-third annual meeting of the Medical Society of Nova Scotia was held at New Glasgow on July 5. Dr. Evan Kennedy of New Glasgow was the president. Only a business meeting was held; but Dr. Alexander P. Reid, Middleton, read a paper on his reminiscences from the end of the fifties of the last century down to the present time. Prof. Fraser Harris was elected president for the ensuing year, and Dr. James R. Corston, Halifax, secretary-treasurer.

Hospital News.—Work on the old Toronto General Hospital which was being transformed into a military base hospital has been temporarily discontinued, because the Ottawa military authorities require from the city of Toronto a two years' lease after the war. Lieut.-Col. Thomas B. Richardson, the officer in command, is applying to the board of control for the extension. The hospital is to accommodate 1,040 beds, but up to the present time has only about 500 patients. Already the improvements have cost $30,000.——The West Cliff (England) Canadian Eye and Ear Hospital at Folkstone is under command of Lieut.-Col. J. D. Courtenay, Ottawa. Lieut.-Col. Samuel H. McKee, C. M. G., Montreal, is second in command. Major Alex. B. Osborne, Hamilton, Ont., is in charge of the eye department; and Majors William J. Brown, Lindsay, and Henri M. DuHamel of the ear, nose and throat department. Capt. Percy G. Bell, Winnipeg, is registrar.——Lieut.-Col. Perry G. Goldsmith, Toronto, is on the staff of the Duchess of Connaught Canadian Red Cross Hospital, Taplow, England.——Erection of the new Kootenay Lake General Hospital, Nelson, B. C., is to be commenced at once.——The Royal Victoria Jubilee Hospital, Victoria, B. C., requires a resident medical superintendent who must be a married man and familiar with Roentgen-ray therapy and photographic work. The salary is to be $3,000 with free quarters.——An assistant physician is urgently required for the Mount Sinai Sanatorium for Incipient Tuberculosis, at Ste. Agathe de Monts, Que. The salary offered for the first year is $500. A licensed graduate of the Jewish faith would be preferred.

GENERAL

American Hospital Association to Meet.—The American Hospital Association will hold its next annual meeting in Philadelphia, September 26-30.

The Plattsburg Camps.—Educational camps for medical men will be held at Plattsburg, N. Y., August 24-September 6, September 8-September 21, and September 22-October 5, each camp continuing for two weeks. The qualifications necessary for entering are the same as for the regular military training camps excepting that the applicant must hold the degree of Doctor of Medicine. The instruction is relatively elementary and is designed to give the medical men the army point of view and a knowledge of medico-military methods. About fifty physicians attended the first camp at Plattsburg.

Red Cross Nursing Service.—Under the efficient management of Miss Jane A. Delano, chairman of the National Committee on Nursing Service, a corps of more than 7,000 graduate nurses has been enrolled for Red Cross service. This branch of the work has become so important that it was deemed advisable to secure a superintendent for this bureau and for this duty, Miss Clara D. Noyes, superintendent of the Bellevue Training School, New York, has been secured and will assume her new duties about October 1. There are already about 1,000 nurses ready for the base hospital units now in process of organization and similar groups of ten nurses each, known as the emergency detachment of nurses, are being organized to meet possible service needs.

Bequests and Donations.—The following bequests and donations have been recently been announced:

Mt. Sinai Hospital, New York, a donation of $150,000 for the endowment of its department of abdominal surgery, by Charles A. Wimpfheimer.

Hospital for Women and Children, Boston, to establish a free bed, $5,000; Baker's Free Hospital for Women, Boston, to establish a free bed, $5,000; Boston Children's Hospital, $2,000, and Children's Island Sanitarium, Salem Harbor, $1,000, by the will of Mrs. R. B. Warren, Boston.

Pennsylvania Hospital, Philadelphia, Protestant Episcopal Hospital, Presbyterian Hospital, Polyclinic Hospital and Samaritan Hospital, each $10,000; Philadelphia Home for Incurables, Jewish Hospital Association and Medical Chirurgical Hospital, each $5,000, by the will of Hall Engles. The bequests to the Pennsylvania and Presbyterian hospitals are to endow two free beds in each institution in memory of Mr. Engles' mother, and the bequest to the Protestant Episcopal Hospital is to endow two free beds in memory of the testator.

St. Mary's Hospital, Philadelphia, $5,000 to endow a bed, by the will of George W. Nevil.

Servants and Relief of Incurable Hospital and Skin and Cancer Hospital, New York, each $5,000, by the will of Mr. Miner Veitch.

Modification of Patent Laws.—At its last meeting, the Pennsylvania Pharmaceutical Association adopted a resolution calling on Congress "to strongly support the pending Tariff Bill, affording protection to American industries." Also, another resolution was adopted, asking Congress to modify the present patent laws "discontinuing the patenting of products but recognizing only applications for patents on processes." The following preambles preceded the adoption of the resolutions:

WHEREAS, The American public is obliged to pay extravagantly high and unjustly extortionate prices for the synthetic drugs and medicines they are obliged to buy from foreign holders of patents on medicinal products, and

WHEREAS, The United States patent laws in granting product-patents, instead of process-patents to foreign manufacturers are hindering instead of "promoting science and useful arts" for which they are instituted, and

WHEREAS, The synthetic drug industry is primarily and basically dependent upon the dye-making industry, and as the dye stuff industry cannot be successfully carried on without ample tariff protection and the liberation of the infant American organic chemical industry from the bondage of American patent laws, which favor priority and deter invention and progress and which accord American protection to foreigners which their native countries deny them, and

WHEREAS, The present United States patent laws favor the creation of monopolies in this country by the citizens of Germany, France, Austria-Hungary, Italy, Japan and the Argentine Republic, which is denied the citizens of those countries by their own laws, and

WHEREAS, A patent on products creates a monopoly not only on the product itself, but on all subsequent improvements in process for the making of the same, thereby destroying the stimulus for improvements and discovery through research.

Medical Treatment at Government Expense for Injured Federal Employees; Compensation for Disablement.—An act to provide compensation for employees of the national government injured while in the performance of their duties, which has passed both houses of Congress and will become a law as soon as the conference committee to which it has been referred has adjusted certain minor details, will increase the demand by the United States government for the services of physicians throughout the entire country. For all injured civil employees of the United States, numbering approximately 400,000, it provides medical, surgical, and hospital services and supplies at government expense.

Medical, surgical, and hospital services and supplies are to be furnished by the United States to any civil employee injured in the line of duty, immediately after the injury and for a reasonable period thereafter, whether disability has or has not resulted, unless the employee refuses to accept them. United States medical officers and hospitals are to furnish such services in so far as may be practicable; otherwise they are to be furnished by private physicians and hospitals designated or approved by the United States Employee's Compensation Commission, created to carry the law in effect. Private physicians and hospitals are to be paid for such services from the employee's compensation fund, appropriated by Congress. If necessary in order to obtain proper medical, surgical and hospital treatment, the injured employee may be furnished transportation at government expense to some place where such treatment can be obtained.

The furnishing of treatment to injured employees is, however, merely a part of the larger scheme of compensation for disablement and death in the discharge of duty. Compensation is already provided by law for approximately 100,000 civil employees of the government who are engaged in specially hazardous employments. The act that is about to replace the older statute extends the same benefits to the remaining 300,000 employees, whose work is not extra-hazardous. Compensation is to be paid for the disability or the death of the employee resulting from personal injury while in the performance of duty, provided the injury was not caused by his willful misconduct, deliberate intent, or intoxication.

For total disability, compensation is not to exceed two thirds of the total compensation of the employee. If the disability be but partial, compensation shall not exceed two thirds of the difference between the pay of the employee before the injury and his wage-earning capacity after it. In no case, however, is the compensation to exceed $66.67 a month. An elaborate scale is laid down for the allotment of benefits to dependent relatives and kin if the employee dies, and provision is made for the payment of funeral expenses by the government, in the discretion of the commission. Payments are to be made monthly and are to continue indefinitely, during the disability of the employee or the dependency of the beneficiaries, but authority is given for the payment in certain cases of a lump sum in commutation of instalment payments.

Every claim for compensation, except in case of death, must be accompanied by a certificate from the employee's physician stating the nature of the injury and the nature and probable extent of the disability. The employee must submit to all necessary examinations by a medical officer of the United States, or by a physician designated or approved by the commission, but the employee may have present any duly qualified physician selected and paid by him. In case of disagreement between two such physicians, the commission is to appoint a third to make the examination.

For the purpose of carrying the law into effect, a commission is created, to be known as the United States Employees' Compensation Commission, to consist of three members appointed by the president, by and with the consent of the Senate, each with a compensation of $4,000 a year. The principal office of the commission is to be in Washington, D. C.

FOREIGN NEWS

Trolley Car Ambulance.—A city in Brazil is said to use a trolley car ambulance for the transportation of its patients to and from a hospital in the suburbs.

Infantile Paralysis in Cuba.—The *Revista de Medicina y Cirugia* of Havana states that cases of poliomyelitis have appeared in that city and at Guines and Vueltas, but that they have all been isolated cases and there has been no mortality.

Typhus Stamped Out in Madrid Province.—Typhus has been epidemic in and around Madrid recently. Isolation barracks were installed on the grounds of one hospital and the epidemic was promptly arrested. Our Madrid exchange says that the mortality was only 10 per cent., notwithstanding the large number of cases.

The Alvarenga Prize in Brazil.—The Alvarenga prize this year in Brazil was awarded to G. Riedel, chief of the biologic chemistry service at the Hospicio Nacional and instructor at the University of Rio. His work described extensive personal research on the protective ferments, and a process for determining the specific ferments by superficial tension. This eliminates the sources of error with the Abderhalden dialysis technic.

Durante's Jubilee.—The fiftieth anniversary of the entrance into practice of Prof. F. Durante of the chair of surgery at the University of Rome occurred recently, but he said that on account of the way Italy is making history just now he did not wish the proposed celebration of the occasion. With Baccelli he founded the *Policlinico* twenty-three years ago. He is known as a surgeon far and wide.

Hospital Ship for Sulu Archipelago.—The National Health Board of the Rockefeller Foundation has entered into a cooperative agreement with the Philippine government for the equipment of a hospital ship to go from island to island in the Archipelago, meeting people at shipping points, bringing medical service to the afflicted, training midwives, giving general instructions to the people and guiding and stimulating them to self health. The agreement with the government is for the maintainance of this ship for five years. At the end of this period it is hoped that the ship will have demonstrated its usefulness and that the government will continue the work.

Deaths in the Profession Abroad.—V. Llorente y Matos, a leading physician at Madrid, member of the national board of health and founder of the Institute of Microbiology and Serotherapy, aged 59.——J. Broeckaert, rhinologist and laryngologist at Ghent, aged 49. He had made a special study of the innervation of the throat and published several studies on the recurrent nerve and on paraffin prosthesis, the technic for which he much improved, especially for treatment of ozena.——W. Lindt, instructor in laryngology and otology at the University of Bern, aged 56.——B. P. Sormani, privat-docent of serology at the University of Amsterdam, originator of the "syphilis index" (an aid to the estimation of the state of the infection in syphilis, mentioned in THE JOURNAL, Aug. 23, 1913, p. 632), aged 35. A recent article on the specific limit of resistance of the red corpuscles as a factor in the outcome of the deviation of complement test was summarized in THE JOURNAL, May 8, 1915, p. 1624.

Sick and Wounded Interned in Switzerland.—While the war rages around it on all sides, Switzerland is able to offer sick and wounded prisoners a haven of peace. Its hotels and sanatoriums have been placed at the disposal of the belligerent nations to receive and care for their sick and wounded prisoners at low rates, ranging from a little over $1 to $1.60 a day. Clothes are supplied by the country of the interned, and they are policed by some of their own members. Postal service is free to them in Switzerland and for mail leaving the country. Belgium, France, Germany and Great Britain have taken advantage of Switzerland's offer to care for sick and wounded prisoners and there are said to be now a total of 13,417 thus interned in Switzerland, including 2,948 German soldiers, 452 British and 8,941 French. The relations between the interned and the native populace are kept within narrow bounds. The man's family can come to reside in the town with him, but strict surveillance is kept over them and the interned. While allowed a certain amount of liberty, yet they are compelled to stay within a given area. The contracting powers have agreed to return to Switzerland any of the interned who escape from the country. The only disabilities that bar are chronic alcoholism, mental troubles requiring institutional care and contagious diseases during their acute transmissible stage.

WAR NOTES

Drug Shipment to Orient Permitted.—A letter from the French ambassador, received by Oscar W. Strauss, New York, August 23, brought advice that the French government would permit entry of a shipment of drugs and medical supplies for the Jewish hospital at Jaffa and Jerusalem, valued at $18,000.

OUR TROOPS ON THE BORDER

Red Cross Nurses for Duty on the Border.—In response to a request from the surgeon-general of the army to furnish the names of 100 Red Cross nurses willing to be assigned to active duty on the Mexican border, Miss Jane A. Delano, chairman of the National Committee of Red Cross Nurses Service, has sent fifty-five nurses to the Southwestern states to assist the Army Nursing Corps in caring for the sick and wounded of the armed forces of the United States on the Southern frontier. Of these nurses ten were sent to Eagle Pass, thirty to San Antonio, three to Brownsville, six to Douglas, Ariz., two to El Paso and four to Laredo. By special authorization of the surgeon-general each of the twenty-five Red Cross base hospital units has been requested to designate from its Red Cross personnel two nurses for service on the border.

LONDON LETTER

LONDON, Aug. 14, 1916.

The War

ARMY MEDICAL ORGANIZATION

The thoroughness of the Germans in organizing for this war during a whole generation is a commonplace. But when the history of the war comes to be written, the manner in which this country improvised and in a short time organized an army ten times as great as had ever been majntained by it for war, on a scale which had never been even contemplated, will also be considered remarkable. In the organization of the army, medical arrangements more quickly than any other have attained a high degree of efficiency. Such, indeed, probably never have been equaled, with the possible exception of the Japanese army. In the *British Journal of Surgery*, Sir Alfred Keogh, the director general of the medical corps, has described how the work of expansion was performed. This was rendered possible by certain preparations which had been made in peace for the service of civilian physicians in the army. Owing to the magnitude of the war, the regular officers of the medical corps had to devote all their energies to administration, while the technical work of the care of the sick and wounded was left to specially selected experts. Consulting surgeons were appointed by whom all subsequent surgical developments were determined. They set the scope and standard of practical work and scientific investigation. They determined whether or not the means at the disposal of the hospital surgeons were adequate. They supervised the operations and approved of the operators, so that on them depended whether or not all that was best in British surgery was available for the soldier. Through these consultants the maximum of surgical efficiency was attained. They and they only could insure a high standard of clinical and scientific work. The staffs of the hospitals in this campaign were drawn from numerous schools. Differences of practice and of opinion consequently existed, discussions were frequent, and authoritative pronouncements were necessary. Free play was given to the imagination of many who would have made the future better than the present. New branches of work were organized to meet special conditions, and there was a division of labor. Old problems of military surgery were investigated in the light of the newer knowledge. The Medical Research Committee (appointed under the insurance act) gave valuable aid in establishing laboratories at home and abroad. Never before had such organized researches been carried on during war. Whenever a difficulty arose, whether connected with epidemics or some surgical problem, it was possible to fall back on the laboratory workers for guidance, and therefore none of the new administrative measures were simply experiments: they were the outcome of scientific suggestions. As the war went on, it was possible more and more completely to classify the wounded into groups, each demanding special experts. Orthopedics is perhaps the most important example. Great work has been done for the wounded soldier in overcoming his disabilities in the special hospitals formed under the supreme control of our greatest orthopedic surgeon, Lieut.-Col. Robert Jones. Sir Alfred Keogh is fully convinced "that the more the organization of hospitals into special departments is pursued the greater will be the degree of efficiency reached. Experience has shown, and continues to show, that in such departments research is encouraged, and knowledge acquired and diffused more readily than could otherwise have been the case. One cannot avoid an uncomfortable feeling that if hospitals in civil life had been organized on such a plan, a higher efficiency would have been manifest at the outset."

Drastic Act for the Control of Venereal Disease in Western Australia

In Western Australia an act has been passed for the free diagnosis and treatment of venereal diseases somewhat on the lines of the regulations recently issued in this country and described in a previous letter. But the Australian act goes much further and contains compulsory and penal provisions which would be difficult to pass in the mother country, where the "rights" of the individual are more respected than in her somewhat socialistic colonies. No person other than a physician, or person acting under the direct instructions of a physician, shall attend on or prescribe for any person suffering from any venereal disease for the purpose of curing, alleviating or treating such disease, under a penalty of $250 or six months' hard labor. Every person suffering from any venereal disease shall, within three days of his becoming aware or suspecting that he is suffering, consult a physician and place himself under treatment by such physician, under a penalty of $100. He must keep under treatment until he receives a certificate of cure, under a penalty of $100. If he changes his physician he must declare the name and address of his last previous adviser, and the new physician shall notify such previous adviser. The penalty for the infraction of this provision is $25. Every physician must report all cases of venereal disease in prescribed form to the commissioner of public health, stating age and sex of patient, but not name and address, under a penalty of $25. If a patient fails to attend his physician for six weeks the physician must notify the commissioner, giving name and address of patient, under a penalty of $25. The physician shall give the patient written notice of the danger of the disease, particularly warning against marriage until cured, under a penalty of $25. In case of a person under the age of 16 years being infected, the parents or guardians are to exercise their authority to secure observance of the act, under a penalty of $50. They must report to the commissioner failure of the person to carry out the law, under a penalty of $50.

The most drastic provision of the act relates to compulsory examination and treatment. When the commissioner has received a signed statement in which shall be set forth the full name and address of the informant, stating that any person is suffering from venereal disease, and whenever the commissioner has reason to believe that such person is suffering from such disease, he may give notice, in writing, to such person requiring him to consult a physician or produce a certificate that such person is or is not suffering from the disease. If the commissioner is not satisfied with such certificate, he may authorize any health officer or any two physicians to examine such person to ascertain whether or not such person is suffering from the disease, and the said officer or physicians shall have power to examine the person accordingly, and shall report the result of his or their examination to the commissioner in writing. In case of a female one physician shall, if the person so desire, be a female physician if one be available. If the report states that the person is suffering from the disease, and the commissioner judges there is risk of infecting others, he may issue a warrant for the arrest of the person and detention in hospital for two weeks, where any examination necessary may be made. If further detention is deemed necessary, the governor, on the recommendation of the commissioner, may issue a warrant for the arrest and detention of the person for such time as he thinks fit and for treatment and examination. The detained person has the right to apply to the courts for an independent examination by two physicians, one named on behalf of the patient, who shall certify his state. Such appeal may not be repeated within six months of a previous appeal. The section applies to persons already in prison, and the hospital detention is to count as part of their term of imprisonment. The warrants issued authorize the use of force to carry them into effect, and the police "shall on sight of the warrant" render all necessary aid, under a penalty of $100. No person shall knowingly infect any other person with venereal disease or knowingly do or suffer any act likely to lead to the infection of any other person with such a disease, under a penalty of $250 or six months' hard labor. The commissioner is to provide, free of charge, all laboratory investigation necessary to accurate scientific diagnosis to all physicians. Powers are given to subsidize hospitals for the treatment of the infected, and at such hospitals the treatment shall be free. Every physician in receipt of any salary from the state shall examine and treat free of charge any infected person who applies to him, and the commissioner shall reimburse him under a penalty of $25. All proceedings under these sections of the act in any court shall be *in camera*, and it shall be unlawful to publish in any newspaper a report of any such proceedings. The penalty for the first offense is $500 or six months' imprisonment, and for the second offense $2,500 or twelve months' imprisonment.

Advertisements of medicines or appliances for venereal diseases, impotence, or female irregularities are prohibited. No circulars, books or printed notices may be circulated by hand, exhibition, newspaper, or by the post. Finally, the government has issued a booklet on venereal diseases, so that ignorance cannot be pleaded as an excuse. The manner in which they are contracted, the symptoms, and the precautions to be taken by infected persons are described.

PARIS LETTER

Paris, Aug. 3, 1916.

The War

THE TREATMENT OF WAR WOUNDS

At the Réunion médico-chirurgicale de la V-e armée, Dr. Leroy gave an account of the good results he has had in the treatment of war wounds by Lemaitre's method: thorough exploration of the track of the projectile, removal of all foreign bodies, excision of contused lacerated tissues, painting of the surfaces of the wound with tincture of iodin, primitive and secondary suture. The earlier the treatment the better the results. This method has the advantage of suppressing pus and fever and rendering amputation and suppurative arthritis rare, yet assuring to the wound a safe evolution without fear of insidious, late, gaseous gangrene, or of secondary hemorrhage, and above all, without production of those fistulas in the bone or muscle which are so refractory, and of those obstinate false joints which are almost invariably the consequence of operative abstention at the outset. This practice, which seems at first sight too bold and too free, is in reality prudent and eminently conservative; 298 wounded were treated according to this method, and 175 patients with wounds of the soft parts have all been discharged. The projectiles have been removed without suppuration and without fever. Many of the wounds cicatrized either by secondary or primary union (twenty-six cases of the latter). Primary suture is successful whenever cleaning out the wound is completely effected. The appearance of fever or of pus is a proof of defective operative technic. The results of this immediate disinfection are of a still more brilliant demonstrative value in joint wounds. Of eighteen articular wounds, thirteen have been cured with restitutio ad integrum of the joint (six knee joints out of seven cases observed), five were obliged to submit to total or partial resection because of the extent of the open lesions. There was no death and no amputation. Twenty-one cases of various fractures have also been treated; two amputations were necessary on account of the extent of the lesion; all the others have either been discharged or are firmly united or nearly so. Free excision of all muscular tissue which threatens to slough in gaseous gangrene has given results so satisfactory as to be astonishing. Of thirty-five cases of gaseous gangrene, Dr. Leroy lost only five. In two of these, the intervention had not been sufficiently free. These muscular resections have sometimes attained considerable proportions. The following up of the track has sometimes led to discovery of unsuspected lesions of important organs. Eight times, these were in the great vessels, three times in the vertebral canal (three cured without injury to spinal cord), one in the peritoneal cavity (transthoracic laparotomy, cured). Speaking generally, the mortality in ambulance cases has diminished by more than one half since application of this procedure.

PERIARTICULAR ABSCESSES COMPLICATING SUPPURATIVE ARTHRITIS OF THE KNEE

Dr. Chaput, hospital surgeon, has drawn the attention of the Société de chirurgie de Paris to the gravity of periarticular abscesses originating in the retrocondylian synovial membrane and which proves fatal to the majority of patients suffering from suppurative arthritis of the knee. These abscesses result from perforation of the synovial membrane. Some are produced by direct propagation of the infection. Others develop in the lymphatics of the space behind the knees, but this is rare. Others again form in the thickness of the vastus internus a little above the articulation. The diagnosis of periarticular abscesses is usually very difficult, and as a rule one does not recognize them until the last possible moment, at which time it is generally too late to cure the patient. It is possible, however, to make a much earlier diagnosis by observing the following signs: 1. Considerable edema of the leg and of the foot in the course of an arthritis of the knee should always make one suspect a posterior periarticular abscess. 2. When pressure on the thigh or on the calf provokes an increase in the flow of pus from the articular incisions, there exists a periarticular abscess. 3. This condition may also be suspected in every arthritis of the knee which, being well drained, continues to afford abundant discharge of pus accompanied by persistent fever. In the treatment of these abscesses, the only possibility of success is a very early and even preventive intervention. The articulation must be sufficiently drained, and all foreign bodies and bony splinters removed. If the fever does not pass away in forty-eight hours, one may suspect a periarticular abscess, and one should excise at the points of election according to its position. These incisions very often evacuate the pus; or, if the abscess is not yet formed, they will prevent it.

PRODUCT OF THE SALE OF RED CROSS STAMPS

Since the commencement of the war, many persons have been in the habit of employing for their correspondence the Red Cross stamps. These stamps are of numerous kinds, each of the societies constituting the French Red Cross having published a series, but the most used are those which were issued by the Ministry of Posts and Telegraphs and serving for the franking of correspondence up to 10 centimes (practically 2 cents) 5 centimes of which goes to the Red Cross (The Journal, Oct. 31, 1914, p. 1591; Jan. 2, 1915, p. 68, and Jan. 22, 1916, p. 290). Up to the present, the amount collected by the Red Cross in this way is 1,508,000 francs ($304,940). The organization has thus been able to increase by 350,000 the number of hospital days in its formations at the front.

Against Alcoholism

A delegation at the Ligue nationale contre l'alcoolisme, presided over by Professor Debove, has just drawn the attention of the ministry of public instruction to the importance of antialcoholism teaching in the schools and the desirability of issuing a circular drawing the attention of the teaching staff to the importance of the matter. The ministry has promised to send out such a circular particularly to the primary schools. The same delegate submitted to the ministry of the marine a complete program for antialcoholism propaganda among the personnel of the fleet and the workmen of the dockyard. The Ligue nationale contre l'alcoolisme intends also to undertake a campaign in the country in favor of total prohibition. On the other hand, the hygiene commission of the Chamber of Deputies, believing that the project adopted by parliament to suppress the privileges of the small distiller and to impose a surtax on alcohol is insufficient, has charged its reporter, Mr. Schmidt, to prepare a bill establishing the monopoly of the wholesale and retail sale of alcohol. This proposition is inspired by the example of Russia, where there is government monopoly of the manufacture of alcohol, and at the commencement of the war its sale throughout the empire was prohibited.

Eyeball Compressor for Investigation of Oculocardiac Reflex

It is known that compression of the eyeball causes a transitory modification of the cardiac rhythm which is known as the oculocardiac reflex, described by Aschner in 1908. In the normal condition, this reflex causes a slowing of the pulse (of from 4 to 10 beats to a minute); in a great number of pathologic conditions it is modified. Either the slowing is increased or the reflex is absent or there is an acceleration of the pulse. To provoke this reflex, it is usually necessary to have a recourse to an assistant. Digital compression varies necessarily with the assistant, it is not always uniform in the same person, it is not measurable, it is not aseptic, and it requires the presence of a third party. Dr. Roubinovitch of the hospital at Bicêtre has devised an apparatus which permits a regular, uniform, measurable, aseptic, mechanical compression of the eyeball. It can be employed without calling for the aid of a third person and without danger of sepsis.

A Strange Quack

Pierre Teillon, aged 60 years, formerly a wine grower, appeared recently before the courts accused of the illegal practice of medicine. It appears that he was in the habit of treating all sorts of cases by means of sulphuric acid, and that he had caused the death of one unfortunate woman. In answer to questions of the president, the accused gave the following reply:

"I had noticed that molds which grow in the inside of casks were completely destroyed by sulphuric acid. On the other hand, I had read in a dictionary that Pasteur recommends the application of sulphuric acid to the bites of rabid animals. From this I concluded that sulphuric acid is a product which, applied to the human body, was capable of producing cures by destroying the noxious principles of the blood which are different sorts of molds. Acting on my idea, I made some experiments, first of all on my horse which was at that time ill, later on myself, and then on my sister. We were all cured. Since that time, in the interests of humanity, I have set myself to treat with sulphuric acid all those who come to me. I wished my fellow men to profit from my discovery."

The tribunal recompensed the excellent intention of Pierre Teillon by condemning him to three months in prison.

Marriages

GEORGE FRANCIS BICKNELL, M.D., Indiana Harbor, Ind., to Miss Pansy Miller of Gary, Ind., at Valparaiso, Ind., August 23.

ASST. SURG. CARL MICHEL, U. S. P. H. S., to Miss Mary Eloise Field of Casa Rosa, San Juan, Porto Rico, August 12.

AUDLEY OWENTON SANDERS, M.D., Lindsay, Calif., to Miss Inga Hansen, of Hanford, Calif., at Los Angeles, recently.

CARLOS ALCIBIADES DE LA PUENTE BALDION, M.D., to Mrs. Mary A. Bennett, both of Philadelphia, August 16.

DANIEL PHILLIP KINCAID, M.D., to Miss Bessie Loraine Sowers, both of Memphis, Tenn., August 16.

ERNEST CHARLES ASBURY, M.D., to Miss Nellie Smith, both of St. Louis, at Detroit, recently.

ENOCH GEORGE KLIMSS, M.D., to Miss Estella Brozaitas, both of Philadelphia, August 17.

SIMEON ALFRED JACOBS, M.D., New York, to Miss Lena Siegel of Baltimore, August 20.

JOHN C. STEVENS, M.D., to Miss Mayanna Mayer, both of Harrisburg, Pa., August 15.

MOSES A. JONES, M.D., to Miss Irene Mershon, both of Walter, Okla., recently.

Deaths

Commander Edward Kershner, Medical Inspector, U. S. Navy (retired); Hagerstown, Md.; New York University, New York, 1861; aged 77; a Fellow of the American Medical Association; emeritus professor of naval, military and state hygiene in the New York Post-Graduate Medical School; a veteran of the Civil War, in which he was on duty on the *U. S. S. Cumberland* when she was sunk by the *Merrimac* in Hampton Roads; fleet surgeon of the Asiatic Station for several years; inspector of the Infant's Hospital, Randall's, N. Y., and of the Alms House, Blackwell's Island; who was retired from the navy, April 2, 1902, after seventeen years and seven months' sea service, and twelve years and eight months' shore or other duty; died suddenly in Hagerstown, August 20, from cerebral hemorrhage.

William Riley Franklin, M.D., Rockford, Ill.; Chicago Homeopathic Medical College, 1883; aged 57; a Fellow of the American Medical Association; a member of the consulting staff of the Rockford City Hospital, local surgeon of the Burlington System and the Rockford Interurban Railway; was drowned, while swimming at Michillinda, Mich., August 19.

Frederick D. Smith, M.D., Coopersville, Mich.; Philadelphia University of Medicine and Surgery, 1870; aged 71; formerly a Fellow of the American Medical Association; a member of the Michigan State Medical Society; for forty-three years a practitioner of Coopersville and president of the People's Savings Bank; died at his home, August 18.

George Whitehouse Ryan, M.D., Boston; Tufts Medical College, Boston, 1899; aged 44; a graduate of the U. S. Naval Academy, and a veteran of the Spanish-American War; for several years surgeon-in-chief of the Brockton (Mass.) Relief Hospital, and of the Boston Emergency Hospital; died in the Commonwealth Hospital, Boston, August 15.

John Ashby Rosenberger, M.D., Del Rey, Calif.; Jefferson Medical College, 1894; aged 44; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of California; was killed by the overturning of his automobile near Fresno, Calif., August 15.

Henry H. Roedel, M.D., Lebanon Valley, Pa.; University of Pennsylvania, Philadelphia, 1857; aged 84; for more than half a century a practitioner of Lebanon; a member of the Medical Society of the State of Pennsylvania; died at his home, about August 18, from senile debility.

Thomas Hall Emery, M.D., Monkton, Md.; University of Maryland, Baltimore, 1896; aged 43; a member of the Medical and Chirurgical Faculty of Maryland; sanitary officer of the tenth district of Baltimore County; died at Saranac Lake, N. Y., August 15, from tuberculosis.

John Buchanan Murrey, M.D., Nashville, Tenn.; Vanderbilt University, Nashville, 1877; aged 67; for more than twenty years secretary for the Nashville Board of Underwriters; and for a long time a practitioner and druggist of Nashville; died at his home, August 16.

Herschel DeLos Baker, M.D., Springfield, Mo.; University of Michigan, Ann Arbor, 1883; aged 64; a member of the Missouri State Medical Association and a specialist on diseases of the eye, ear, nose and throat; died at his home, August 14, from endocarditis.

Silas W. Fowler, M.D., Delaware, Ohio; Jefferson Medical College, 1871; aged 69; formerly a Fellow of the American Medical Association; author of a biography of the physicians of Delaware County, Ohio; died at his home, August 13, from pneumonia.

John S. Wallace, M.D., Brunswick, Mo.; Belleview Hospital Medical College, 1873; aged 67; a Fellow of the American Medical Association; a member of the state senate; died suddenly, August 17, from heart disease, while on his way to make a professional call.

Joseph Leo Milton, M.D., Oakland, Calif.; University of California, Oakland, 1891; aged 46; a Fellow of the American Medical Association; professor of orthopedic surgery in the Oakland College of Medicine and Surgery; died at his home, August 19.

James H. Rose, M.D., Harrisburg, Ill.; Medical College of Evansville, Ind., 1878; aged 68; a member of the Illinois State Medical Society; and for thirty years a practitioner of Harrisburg; died at his home, August 17, from heart disease.

Josiah Washington Hoff, Ann Arbor, Mich.; a practitioner since 1844; aged 93; formerly a Fellow of the American Medical Association; a member of the Ohio State Medical Association for forty-five years; died at his home, July 23.

William Jefferson Rowe, M.D., Buford, Ga.; Medical College of Georgia, Augusta, 1887; aged 60; formerly a member of the Medical Association of Georgia; died at the home of his daughter in Flowery Branch, Ga., August 12.

Elijah C. Troutt, M.D., Birds, Ill.; St. Louis College of Physicians and Surgeons, 1907; aged 31; formerly a Fellow of the American Medical Association; died at his home, August 11, from progressive muscular atrophy.

Oliver Jay Ruth, M.D., Colchester, Ill.; Keokuk (Iowa) Medical College, 1891; aged 49; formerly a member of the Illinois State Medical Society; died in Winterset, Iowa, August 19, from intestinal obstruction.

Leander W. Burt, M.D., Lancaster, Calif.; University of Southern California, Los Angeles, 1905; aged 33; director of the Lancaster Chamber of Commerce; died at his home, July 18, from ptomain poisoning.

John Wesley Carver, M.D., East Peru, Iowa; Keokuk (Iowa) Medical College, 1906; aged 36; a member of the Iowa State Medical Society; a member of the town council; died at his home, July 31.

Wilbur Lee Pepper, M.D., Philadelphia; Jefferson Medical College, 1892; aged 40; a Fellow of the American Medical Association; died at his father's summer home, Rehoboth Beach, Del., August 13.

Marvin Debrill Parham, M.D., Church Road, Va.; Medical College of Virginia, Richmond, 1860; aged 79; a member of the Medical Society of Virginia; died in the Petersburg (Va.) Hospital, August 16.

Edward E. Berry, M.D., Plattville, Wis.; aged 87; Rush Medical College, 1866; surgeon of the Thirty-Third Wisconsin Volunteer Infantry during the Civil War; died at his home, August 9.

John H. Roebuck, M.D., Bethlehem, Pa.; University of Pennsylvania, Philadelphia, 1865; aged 76; a member of the Medical Society of the State of Pennsylvania; died at his home, August 17.

Charles Milton Hanna, M.D., Preston, Ohio; Kentucky School of Medicine, Louisville, Ky., 1898; aged 43; died at his home, August 16, from cerebral hemorrhage.

Clarence James Lockhart, M.D., Freedom, Pa.; Cleveland-Pulte Medical College, Cleveland, 1912; aged 28; was shot and killed by a patient at Freedom, August 20.

Dwight Snellen Babbitt, M.D., Defiance, Ohio; Eclectic Medical Institute, Cincinnati, 1869; aged 74; a veteran of the Civil War; died at his home, August 13.

E. Forest Harbert, M.D., Wyatt, W. Va.; College of Physicians and Surgeons, Baltimore, 1913; aged 32; died at his home recently from tuberculosis.

Elias Selig Feuerstein, M.D., Brooklyn; University of Vienna, Austria, 1887; aged 55; died at his home, August 15, from a nervous breakdown.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE HYPOPHOSPHITE FALLACY

Report of the Council on Pharmacy and Chemistry

The Council has adopted the following report and authorized its publication. W. A. PUCKNER, Secretary.

The introduction of hypophosphites into medicine was due to an erroneous and now discarded theory as to the cause of tuberculosis of which one Dr. J. F. Churchill of London, and later of Paris, was the promulgator and propagandist.[1] This theory was that the so-called "tuberculous diathesis" was due to a deficiency of phosphorus in the blood. Believing that the hypophosphites, while nontoxic, were capable of further oxidation in the organism, Churchill recommended them as the best means of supplying the supposedly lacking phosphorus. It is now known that tuberculosis is not due to a deficiency of phosphorus. Of more importance is the fact, now known, that little phosphorus, if any, is assimilated from the hypophosphites—far less than from phosphorus compounds of ordinary food.[2] There is no justification for giving hypophosphites for the sake of their phosphorus content. For various reasons, however—partly from force of habit and partly because of the power of advertising—many physicians still prescribe hypophosphite preparations, and consequently, they are still included in the Pharmacopeia and in textbooks on materia medica and therapeutics. They are put out in the form of "specialties" and of proprietary preparations, and are lauded extravagantly by the manufacturers of the latter.

Although the overwhelming weight of evidence was against the probability that the hypophosphite preparations are of value as therapeutic agents, the Council thought it well to investigate the subject. Dr. W. McKim Marriott of Baltimore was therefore requested to review the evidence for and against the therapeutic usefulness of the hypophosphites and to conduct such experiments as seemed necessary. His report has already appeared in THE JOURNAL.[3]

Dr. Marriott found that nine observers (Paquelin and Joly, Vermeulen, Boddaert, Massol and Gamel, Panzer, Delaini and Berg), who endeavored to test the alleged utilization of the hypophosphites in the organism, reported that there is complete, or practically complete, elimination of hypophosphites in the urine, with little or no effect on the body. Only one experimenter (Patta) claimed that a considerable amount of ingested hypophosphite was retained in the body; however, he used a method now known to be inaccurate and made obvious errors in calculation, so that his conclusions are unwarranted.

Since the evidence was even to this extent contradictory, Marriott performed a series of experiments. The methods of this study and details of results are described in his paper, in which he also discusses the experiments of some other observers. Marriott writes:

"None of the subjects of the experiment [Marriott's] experienced any effect whatsoever from the administration of the drug. . . . Almost all of the ingested hypophosphite is promptly eliminated unchanged. . . .

"These experiments [Forbes'] demonstrate conclusively that the hypophosphites possess no specific value as a source of phosphorus for the body. This is not to be wondered at in view of the fact that 85 per cent. of the phosphorus ingested in the form of hypophosphite is excreted unchanged, and there is no proof that even the remaining 15 per cent. is available to the organism. It is doubtful if there are any conditions in which the body suffers from lack of phosphorus. Even should such conditions exist, phosphorus, in the form that it occurs in the ordinary foods, or as phosphates, is more efficient in supplying the deficit than hypophosphites that must be oxidized before utilization and which are only about 15 per cent. oxidized if at all. For example, half a glass of milk contains more available phosphorus than three large doses of hypophosphites of 15 grains each, as great a dosage as is usually given.

"What, then, is the therapeutic value of hypophosphites? There is no reliable evidence that they exert a physiologic effect; it has not been demonstrated that they influence any pathologic process; they are not 'foods.' If they are of any use, that use has never been discovered."

In view of the foregoing, it seemed to the Council advisable to examine the claims under which a few of the proprietary hypophosphite preparations are marketed. The following are representative:

FELLOWS' SYRUP OF HYPOPHOSPHITES

No very exact information concerning the composition is furnished by the manufacturers (Fellows Medical Mfg. Co., New York). They say that the product

". . . contains the chemically pure hypophosphites of iron, quinin, strychnin, calcium, manganese and potassium, agreeably blended in the form of a bland, stable syrup with a slightly alkaline reaction. . . .

"Each fluid drachm contains the equivalent of 1-64th of a grain of pure strychnin."

The Fellows' Hypophosphites advertising furnishes something like a barometer of the popular status of hypophosphites. In one circular (undated, but, from certain references contained in it, presumably issued ten or fifteen years ago) we read:

"It is an indubitable fact that the hypophosphites have earned the distinction of having their therapeutic value more completely established than have any other remedial agents. . . . it is only by accepting the current view, which was originally advanced by Mr. Fellows, that we can satisfactorily account for the incontestable fact that the hypophosphites are of supreme importance in the treatment of a very extensive variety of affections. . . . the hypophosphites increase the consumption of oxygen and the elimination of carbon dioxide. In this manner, they stimulate nutrition and promote constructive metamorphosis. . . . It is now universally conceded that the widespread utility of the hypophosphites is due to the fact that they substantially improve metabolic processes, thus increasing the disease-resisting capacity of all the tissues."

The circular, continuing, emphasizes the "incomparable phosphorus-contributing properties" of Fellows' Syrup, its "extraordinary reconstructive properties" and "the magnificent results which invariably attend its employment in the treatment of anemia, chronic bronchitis, chlorosis, neurasthenia, mollities ossium, delayed union of fractures, rickets, convalescence," etc.

A circular bearing the copyright date 1914, on the other hand, admits that:

"The theories for the favorable action of Fellows Syrup of Hypophosphites have undergone several changes."

The same circular further maintains, however, that:

". . . the fact has never been challenged that in Fellows Syrup of Hypophosphites we have one of the most efficient, most complete, most all-round tonics and roborants in the materia medica."

No attempt is made to base this assertion on the therapeutic action of the constituents. In other words, the old theory, which formed the basis for the popularity of Fellows' Syrup, has been thrown overboard, but no substitute is deemed necessary; the momentum already acquired is apparently regarded as sufficient to insure its continued sale.

Fellows' Syrup of Hypophosphites is a semisecret, unscientific preparation—an affront to sound therapy—exploited by means of extravagant and misleading statements.

SYRUPUS ROBORANS (SYRUP HYPOPHOSPHITES COMP. WITH QUININ, STRYCHNIN AND MANGANESE)

Little information concerning this preparation seems to be furnished at present by the manufacturers, Arthur Peter & Co., Louisville, Ky. According to an old circular, it contains, in each fluidounce,

	Grains
"Hypophos. Potass.	1½
Hypophos. Manganese	1
Hypophos. Lime	1
Hypophos. Iron	1½
Hypophos. Quinin	9/10
Hypophos. Strychnin	1/10

"1/128 grain Strychnia to Teaspoonful."

1. Churchill, J. F.: De la cause immédiate et du traitement spécifique de la phthisie pulmonaire et des maladies tuberculeuses, Paris, 1858.
2. The Hypophosphite Fallacy, THE JOURNAL, April 25, 1914, p. 1346.
3. Marriott, W. McKim: The Therapeutic Value of the Hypophosphites, THE JOURNAL A. M. A., Feb. 12, 1916, p. 486.

Further, according to the same circular:

"The Hypophosphites are especially useful in all diseases where there is a lack of nutrition. . . . They are the best of all remedies in Rachitis, non-union of fractures, Osteomalacia and Syphilitic Periostitis."

As for Syrupus Roborans itself:

"This elegant preparation is . . . the best general tonic and reconstructive known."

The unwarranted therapeutic claims formerly made for it seem to be no longer circulated. Syrupus Roborans is an unscientific, shotgun mixture.

SCHLOTTERBECK'S SOLUTION HYPOPHOSPHITES OF LIME AND SODA (LIQ. HYPOPHOSPHITUM, SCHLOTTERBECK'S)

The Schlotterbeck & Foss Co., Portland, Maine, the manufacturers, say of their preparation:

"This solution contains 30 grains of the combined Hypophosphites of Lime and Soda to the ounce. It contains No Sugar, No Acid and it is Perfectly Neutral."

"Indications for use.—Galactostasis, Imperfect Metabolism, Neurasthenia, Nervous Dyspepsia, Insomnia, Convalescence, Acetonuria, Cyclic Vomiting in Infants, Diabetes, Starvation, Deficiency of Lime, Mother's Teeth during Pregnancy, Dentition of Infants, Rachitis, Furunculosis, Vomiting of Pregnancy, Obesity."

"Migraine is often caused by conditions for which this Solution is one of the most satisfactory remedies."

"In Insomnia due to advancing age, it will often act as a hypnotic. . . ."

Of the hypophosphites the Schlotterbeck & Foss Company say:

"If 'damning it with faint praise' on the part of some of the leading medical authorities, or utterly condemning it as useless, on the part of others, would kill a medicine, the Hypophosphites would long since have disappeared as medicinal agents. Negative testimony in regard to the value of a drug does not settle anything."

Of their own preparation they say:

"When we get the results that ought to follow the administration of Hypophosphites, we have proved that Schlotterbeck's Solution enters the system unchanged."

"This Solution is primarily a blood and nerve tonic and chemical food."

Schlotterbeck's Solution of Hypophosphites of Lime and Soda is a semisecret preparation marketed under claims that are both unwarranted and misleading.

ROBINSON'S HYPOPHOSPHITES

According to the manufacturers, the Robinson-Pettet Company, Louisville, Ky., each fluidounce of this preparation contains:

"Hypophosphites Soda	2 gr.
Hypophosphites Lime	1½ gr.
Hypophosphites Iron	1½ gr.
Hypophosphites Quinin	⅜ gr.
Hypophosphites Strychnine	1/16 gr."

It is claimed to be

"Nutritive, Tonic Alterative. A Standard Remedy in the treatment of Pulmonary Phthisis, Bronchitis, Scrofulous Taint, General Debility, etc. Stimulates Digestion, promotes Assimilation."

The declared composition of the preparation is unscientific, and the therapeutic claims are unwarranted.

EUPEPTIC HYPOPHOSPHITES

Nelson, Baker & Co., Detroit, Mich., who market Eupeptic Hypophosphites, call this preparation:

"A superior combination containing the Hypophosphites of Potassium, Calcium, Iron and Manganese, and the bitter tonics, Quinin and Strychnin, agreeably associated with natural digestive ferments of the pancreatic secretion. It is thus a general reconstructive tonic. . . . The remedy is of especial value in the treatment of mental and nervous affections. . . . It is indicated in pulmonary tuberculosis, in all wasting diseases, in debilitated conditions generally and in all exhaustion from over work."

On the basis of the manufacturer's statement, Eupeptic Hypophosphites must be regarded as a semisecret, unscientific, shotgun preparation, exploited through unwarranted therapeutic claims.

M'ARTHUR'S SYRUP OF THE HYPOPHOSPHITES COMP. (LIME AND SODA)

So far as the recent literature and trade package are concerned, no information as to the composition of this product is furnished beyond what is conveyed in the name. The advertising for McArthur's Syrup, like that for Fellows' Syrup and Peters' Syrupus Roborans, has been modified as time has passed. A few years ago it was advertised under such claims as the following:

". . . Has Stood the Test during many years for unequaled efficacy in the treatment of Tuberculosis. . . . Indicated also as a Tonic and Tissue Builder in convalescence from Fevers, in Nervous Diseases, Rickets, Senile Debility and Bronchitis."

"Its use is indicated in . . . diseases of the chest, chronic cough, throat affections, general debility, brain exhaustion, cholera infantum and wasting diseases of children."

At present no definite claims seem to be made for it; the manufacturers evidently find the magic name of hypophosphites sufficient to evoke the spell for which the advertisement writer's aid was once sought. A testimonial contained in a circular which seems to be still used illustrates both the kind of aura which surrounds hypophosphites in the minds of physicians who are still living in the past, and the kind of logic which has made the reputation of this and many other equally worthless preparations.

"Just about six years ago I had a severe attack of La Grippe which almost killed me. Left me with Asthma (Catarrh) and a severe cough. Did not get out of the house for three months. Took over a dozen bottles McArthur's Hypophos.—came out all right and since then worked hard, but last Fall took another cold, but worked on, used McArthur's Hypophos., am using it now, am on my 12th bottle.

"I have five or six patients whom I have put on McArthur's Hypophos., but I do not prescribe the single bottle, but *wholesale* no less than half dozen bottles. One patient is on his 24th bottle with orders to get another half dozen and keep it up all winter. I have given the same order to all (keep it up all winter) and I myself intend to do the same, for with its use I have lost no time—rain or shine I am doing my work. I know what it has done for me and what it is doing for my patients."

It would be hard to find a more characteristic example of the naive mental processes of the simple folk who in all good faith write testimonials for worthless medicines. This well-meaning practitioner (a homeopath, by the way), because he "came out all right" after an attack of grip, returns all praise to McArthur's Hypophosphites, which he has taken "wholesale." Not the faintest doubt of the validity of his *post hoc ergo propter hoc* argument seems to glimmer across his consciousness.

McArthur's Syrup of the Hypophosphites is an irrational preparation. While its faults are fewer and less glaring than those of some other proprietaries, the circulation of such a testimonial as the one just quoted is sufficient of itself to cast suspicion on the product.

BORCHERDT'S MALT OLIVE WITH HYPOPHOSPHITES, MALTZYME WITH HYPOPHOSPHITES, MALTINE WITH HYPOPHOSPHITES AND MALTINE WITH OLIVE OIL AND HYPOPHOSPHITES

These preparations are now described in the appendix to New and Nonofficial Remedies. Borcherdt's Malt Olive with Hypophosphites (Borcherdt Malt Extract Company, Chicago) is said to contain in each 100 c.c., 0.64 gm. each of calcium and sodium hypophosphites, with malt extract, olive oil and glycerin. Maltzyme with Hypophosphites (Malt-Diastase Company, New York) is said to contain, in each 100 c.c., 0.4 gm. each of calcium, sodium and potassium hypophosphites and 0.005 gm. each of iron and manganese hypophosphites, with maltzyme. Maltine with Hypophosphites (Maltine Company, Brooklyn, N. Y.) is said to contain in each 100 c.c., 0.64 gm. each of calcium and sodium hypophosphites and 0.42 gm. of iron hypophosphite, with maltine. Maltine with Olive Oil and Hypophosphites (Maltine Company, Brooklyn, N. Y.) is said to contain, in each 100 c.c., 0.6 gm. each of calcium and sodium hypophosphites, with maltine and olive oil. In general, no therapeutic claims are made for these mixtures so far as the hypophosphites are concerned. The addition of hypophosphites to such mixtures is irrational and, since it tends to perpetuate the hypophosphite fallacy, detrimental to sound therapeutics.

THE COUNCIL'S ACTION

The Council endorsed the conclusions of the work of Dr. Marriott referred to above, and voted: (1) that the therapeutic use of hypophosphites (except possibly in some cases as a convenient means of administering the positive element in the salt, as ammonium in ammonium hypophosphite or calcium in calcium hypophosphite) is irrational; (2) that the merits of each hypophosphite salt submitted for consideration under the foregoing exception must be judged individually, and (3) that Fellows' Syrup of Hypophosphites, Peters' Syrupus Roborans, Schlotterbeck's Solution Hypophosphites of Lime and Soda, Robinson's Hypophosphites, the Eupeptic

Hypophosphites of Nelson, Baker & Co., and McArthur's Syrup of the Hypophosphites are ineligible for inclusion in New and Nonofficial Remedies, and that Borcherdt's Malt Olive with Hypophosphites, Maltzyme with Hypophosphites, Maltine with Hypophosphites, and Maltine with Olive Oil and Hypophosphites be deleted from the appendix of N. N. R. Of these preparations, all are in conflict with Rule 10; Fellows' Syrup, Schlotterbeck's Solution, Robinson's Hypophosphites and Nelson, Baker & Co.'s Eupeptic Hypophosphites are in conflict with Rule 6; the Fellows, Schlotterbeck, and Nelson, Baker preparations are also in conflict with Rule 1.

Correspondence

Publication of Death Certificates

To the Editor:—A physician may not reveal the nature of his patient's illness during the patient's life without danger of legal penalty. But when the patient dies, the physician is required to give the cause of death in a certificate, which at once becomes a public document. Many newspapers, as a custom, publish these certificates daily in a special column. The obligation of secrecy during life, and the legal necessity which results in publicity after death, are strange contradictions.

One of the evil results is that in many instances the actual cause of death is not given. What family will submit without protest to a certificate which gives syphilis, morphinism or alcoholism as the cause of death of one of its members, when it is known that that cause will be made public for the gratification of the morbidly curious and to the distress and shame of the family? Unless this practice of publishing death certificates is discontinued, there will be no accurate data on the diseases which are regarded as shameful. Further, since some other cause, usually a secondary one, must take the place of the actual cause, statistical evidence will continue to suffer confusion.

A few examples which I have observed in consultation may be cited:

A morphin habitué died of the direct results of withdrawal of morphin. The cause of death was certified as arteriosclerosis, which was present, but certainly did not cause death.

A man, aged 40, died suddenly of cerebral hemorrhage. Syphilis had been recently diagnosed by means of blood and spinal fluid tests. The cause of death was certified as apoplexy.

A man, aged 44, under treatment for malignant syphilis, died from the immediate effects of apoplexy, which was given as the cause of death.

A man, aged 50, suffered from aphasia and mental symptoms suggesting paresis. He was a known syphilitic and died evidently from focal softening. The cause of death was given as apoplexy.

A man, aged 54, suffering from locomotor ataxia, with a known history of syphilis, died from the immediate effects of rupture of the heart, undoubtedly due to gumma and scar tissue formation. The cause of death was given as myocarditis.

A woman, aged 41, gave a history of two weeks' violent headache accompanied by vomiting. Double choked disks were found, both blood serum and spinal fluid gave strong positive Wassermann reactions, and the spinal fluid contained an excess of globulin and 200 cells per cubic millimeter. The cause of death was certified as meningitis.

Clearly, all save the first death were due to syphilis, though in no single instance was the certificate made in such a way as to indicate its presence, either as a remote or an immediate factor. On the other hand, in every instance the immediate cause of death as given was clearly present, though in reality it was in the nature of an artefact.

The mortality from syphilis has long been understated. Twenty years ago it was quite generally taught in clinics that syphilis was a negligible cause of death, except as it was an etiologic factor in paresis and locomotor ataxia. Recognition of its frequency and high mortality rate has steadily increased since that time, until at present we are beginning to get an inkling of its destructive influence. The accompanying table, rearranged from the United States census statistics for 1913, shows the mortality from syphilis, tabes and paresis in the registration area, with a second column showing the figures extended to cover the estimated rate for a total population of 100,000,000, paresis and tabes being, it is assumed, simply modified syphilis.

MORTALITY FROM SYPHILIS, TABES AND PARESIS

	Registration Area, Population 63,298,718, No. of Deaths	Total Area, Population 100,000,000, No. of Deaths
Syphilis	4,589	7,284
Tabes	1,674	2,657
Paresis	4,371	6,936
Total	10,634	16,877

It seems probable that the number of deaths from paresis is reasonably accurate, since the vast majority of patients suffering therefrom die in institutions, and the true cause is given, though even here errors of omission must be more frequent than errors of commission. Deaths from locomotor ataxia are probably properly certified in most instances, as far as the diagnostic ability of the medical attendant permits. But deaths from syphilis are clearly vastly understated. In my practice, except in institutional work, I have never known a family physician to give syphilis as the cause of death. Rarely paresis has been given. Yet during the time the five cases cited above came under my observation, had they constituted all the false certificates given in the territory from which they were drawn, and were the ratio applied to the whole United States, at least 2,000 deaths could be added to this cause alone. As a matter of fact, they probably do not constitute one-fifth the total number of erroneous certificates of death due to syphilis. How much has the publication of death certificates to do with false certificates such as those cited above?

I am not inclined to criticize those who give some euphonious designation of the cause of death as a substitute for syphilis, etc., for I believe that the dead, or at least the living relatives of the dead, have the same right to privacy as the living patient. Nevertheless, there ought to be some remedy for this state of affairs.

I suggest that the American Medical Association, through its component state associations, take some action to make publication of death certificates illegal. It is true that even were such acts passed and enforced, false certificates would still be issued. But such legislation would certainly tend to increase the percentage of accurately reported cases.

William House, M.D., Portland, Ore.

Better Medical Care for Rural Communities

To the Editor:—I have read the Current Comment on this subject (The Journal, August 19) in which you assume a scarcity of physicians in rural communities, and state, as the cause thereof, the persistent demand on the part of the public for "specialists." Speaking from experience and observation gained as a country doctor, I do not believe there is any scarcity of physicians in rural communities in this country, except possibly in a few isolated instances. During June and July of this year I traveled through the Southwest in Oklahoma and Kansas. A large part of that time was spent in rural Oklahoma. Oklahoma is a new country, and one would naturally expect to find a scarcity of physicians in a new sparsely settled country, if they were to be found in any place. But I found no scarcity of physicians there. Every little hamlet had two or three.

For the past four years, I have been located in a rural community in Pennsylvania and am well acquainted with conditions from a medical point there, and I can assure you there is no scarcity of physicians in rural Pennsylvania. I am located in a prosperous agricultural country, with coal mines on the west of us and oil in the east. Most of the people are in comfortable circumstances, and on account of a great many of them having oil on their farms, many are wealthy, comparatively speaking. We are only 12 miles from a city of 30,000, and about 50 miles from Pittsburgh, yet none of the people, or at least very few of them, run off to the cities to consult "specialists," except on the advice of myself, or some of the other physicians located in the community. Among the objectionable features of a country prac-

tice are hard work, poor fees, and long drives over roads almost impassable with snow or mud. A machine can be used only a few months in a year. The houses are poor; almost all houses in the country are insanitary and without any of the modern conveniences. There are lack of facilities for educating the children, and lack of amusement. All these disadvantages make the average country doctor dissatisfied with his lot in life, especially if he and his wife have been accustomed to living in a city or large town. Almost all of the physicians in this part of the country are capable men, and I think they are far more resourceful than the average city practitioner. Allow me to digress to say I am not finding any fault with your main argument. To lower the entrance requirements to the medical colleges would not make matters any better.

C. S. HUNTER, M.D., West Sunbury, Pa.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ALDEHYD IN URINE

To the Editor:—1. Can you give me a test for aldehyd in the urine? 2. What significance has it in liver conditions? Please use initials only. S. R. S.

ANSWER.—1. The tests for reducing sugars, such as Fehling's, depend on the presence in the urine of substances having an aldehyd or ketone structure. The reduction of the copper salt in this ordinary sugar test, therefore, is due to the presence of aldehyds or ketones. A well known test for aldehyd is Schiff's fuchsin reaction: Dissolve 0.2 gm. of rosanilin or the hydrochlorid in 10 c.c. of a freshly prepared, saturated aqueous solution of sulphur dioxid. Allow the solution to stand until all signs of pink disappear and it becomes colorless or pale yellow. Then dilute with water to 200 c.c. and preserve for use in a tightly stoppered bottle.

This reagent turns pink or violet on the addition of an aldehyd. The solution must be carefully prepared and does not keep.

2. Aldehyd in the urine would have the same general significance as sugar. There is a difference of opinion as to whether the presence of one or more of the various sugars, with or without acetic and diacetic acid, definitely indicates disease of the liver. It has been shown experimentally that interference with the circulation of the liver causes no glycosuria. Von Moraczewski and Herzfeld have made tests which indicate that there is no specific substance eliminated in the urine which is exclusively characteristic of liver disease. There is some evidence that the presence of acetone bodies in the urine bears some relation to liver conditions.

POISON OAK AND POISON IVY

To the Editor:—Relative to your Current Comment on "The Poisonous Principle of Poison Oak" (THE JOURNAL, Aug. 5, 1916), I should like to state that this principle must be highly volatile. Living, as I do, in a country where poison oak abounds, one often sees susceptible people poisoned by simply riding along roads where the "fence rows" have been freshly mown in July and early August. Apparently the principle is water soluble, as people who are perspiring are much more easily poisoned than those with cool, dry skin. People in the country treat themselves often with an alkaline bath. Some use sodium bicarbonate, others ammonia in water under the impression that the poison is an acid. Whether the principle is an acid or an essential and highly volatile oil I do not presume to know. The ammonia bath is, at least, not harmful to the patient if not taken too strong.

L. G. LELAND, M.D., Newton Falls, Ohio.

ANSWER.—Dr. Leland doubtless refers to the poison ivy, *Rhus toxicodendron*, as the true poison oak, *R. diversiloba*, is not found in Ohio. It has been shown that the poisonous constituent of the poison ivy is neither volatile nor water soluble, the popular belief to the contrary notwithstanding. Instead, the poison exists in the form of a thick emulsion which readily sticks to the hands and clothing and which under certain conditions may retain its activity for months or years. The great abundance of poison ivy makes it easy for the clothing to become contaminated with this emulsion without the knowledge of the wearer, so that poisoning may take place at any time. After the symptoms appear, the sufferer may remember that two or three days previously he had walked near some of the toxic plants, but knows that he did not touch any of them. He assumes, therefore, that the poison must have reached him by passing through the air. Then, too, there are a large number of plants which are reported to have occasionally produced poisoning like rhus so that it is probable that in some cases of supposed poisoning without contact the victims may have encountered some one of these rather than one of the rhus species. It was formerly believed that the rhus poison existed in the pollen and in the minute hairs of the plants. Alighting on the skins of sensitive persons, especially if the victims are perspiring, the pollen grains or hairs are not easily rubbed off, and it was assumed that poisoning might result. Many cases of poisoning without known contact with the plants were accounted for in this way until it was shown by indisputable chemical tests that neither the plant hairs nor the pollen grains contain any of the poison.

Since the poison is soluble in alcohol and in alkalies, the best preventive of poisoning after exposure is to wash the parts with alcohol or with alcohol containing a little dissolved sodium hydroxid. In absence of alcohol, gasoline may be used. An aqueous solution of an alkaline soap is effective. An aqueous solution of sodium bicarbonate is less effective but is useful.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

CALIFORNIA: Los Angeles, Oct. 3. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.
COLORADO: Denver, Oct. 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
GEORGIA: Atlanta, Oct. 10-12. Sec., Dr. C. T. Nolan, Marietta.
IDAHO: Wallace, Oct. 3. Sec., Dr. Charles A. Dettman, Burke.
KANSAS: Topeka, Oct. 10-12. Sec., Dr. H. A. Dykes, Lebanon.
MASSACHUSETTS: Boston, Sept. 12-14. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.
MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.
MINNESOTA: Minneapolis, Oct. 3-6. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.
MISSOURI: Kansas City, Sept. 18-20. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.
MONTANA: Helena, Oct. 3. Sec., Dr. William C. Riddell, Helena.
NEW YORK: Albany, Buffalo, New York and Syracuse, Sept., 19-22. Mr. Harlan H. Horner, Chief Examinations Division, The University of the State of New York, State Department of Education, Albany.
PORTO RICO: San Juan, Oct. 3. Sec., Dr. Quevedo Baez, San Juan.

Montana April Report

Dr. W. C. Riddell, secretary of the State Board of Medical Examiners of Montana, reports the written examination held at Helena, April 4-6, 1916. The total number of subjects examined in was 10; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 29, of whom 21 passed and 8 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Bennett Medical College	(1907) 76.9; (1913) 75.2;	(1915) 76.7
Chicago College of Medicine and Surgery	(1913)	75.3
College of Physicians and Surgeons, Chicago	(1902) 76.4, 82.4; (1905) 81.3;	(1908) 75.3
Illinois Medical College	(1903)	78.2
Jenner Medical College	(1915)	77.6
University of Illinois	(1913)	76.7
Keokuk Medical College, Coll. of Phys. and Surgs.	(1908)	75.1
Johns Hopkins University	(1899)	85.6
University of Michigan Medical School	(1909)	79.1
University of Minnesota	(1900) 81.2;	(1910) 76.8
St. Louis College of Physicians and Surgeons	(1906)	76.4
University of Missouri	(1906)	78.3
John A. Creighton Medical College	(1914)	79.1
Columbia University, College of Phys. and Surgs.	(1911)	78.1
Jefferson Medical College	(1915)	75.9
FAILED		
Chicago College of Medicine and Surgery	(1916)	70.1
College of Physicians and Surgeons, Chicago	(1910)	70.2
Fort Wayne College of Medicine	(1892)	52.7
University of Louisville	(1908)	*
College of Physicians and Surgeons, Baltimore	(1914)	74.1
Starling Ohio Medical College	(1913)	71.5
Milwaukee Medical College	(1912)	64.6
Western University, London, Ont.	(1914)	67.3

* Did not complete the examination.

Book Notices

THE PHARMACOPEIA OF THE UNITED STATES OF AMERICA. Ninth Decennial Revision. By Authority of the United States Pharmacopeial Convention, held at Washington, D. C., May 10, 1910. Prepared by the Committee of Revision and Published by the Board of Trustees. Official from Sept. 1, 1916. Cloth. Price, $3. Pp. 728. Philadelphia: P. Blakiston's Son & Co., 1916.

The ninth revision of the United States Pharmacopeia, which has been over six years in the hands of the Committee of Revision, has just appeared. As was to be expected, the desire of medical men on the Committee of Revision to have therapeutic value made a requirement for admission to the Pharmacopeia has not been fully realized; it remains a book of standards for therapeutically good, bad and indifferent remedies. Among the drugs of little or no therapeutic importance or value are musk, arnica, eriodictyon, quassia, pumpkin seed, saw palmetto berries, sarsaparilla and couch grass. Many superfluous drugs and preparations are included. For instance, of the nine forms of quinin described (quinin alkaloid, bisulphate, dihydrochlorid, hydrobromid, hydrochlorid, salicylate, sulphate and tannate, and quinin and urea hydrochlorid), at least four might well have been eliminated. Two insoluble forms (the alkaloid and the tannate), two soluble forms (the hydrochlorid and quinin and urea hydrochlorid), and a moderately soluble form (the sulphate) are all that could reasonably be demanded by even the most extreme partisans of the doctrine of "pharmaceutic necessity." Further, the use of quinin salicylate for its salicylic acid content and of quinin hydrobromid for its bromid content is unscientific. The inclusion of these salts in the Pharmacopeia is regrettable.

Those interested in the promotion of rational therapy will also regret the inclusion of a number of fluidextracts of violently toxic drugs, such as aconite and gelsemium (dose ½ minim each), belladonna root, digitalis, nux vomica and ipecac (dose 1 minim each), and lobelia (dose 2½ minims). The more diluted forms, the tinctures, of these drugs are preferable. The inclusion of such fluidextracts in the Pharmacopeia is playing into the hands of certain pharmaceutical manufacturers, who recommend the tinctures be prepared from fluidextracts—an unscientific procedure.

The efforts of the medical members of the committee, however, have not been entirely fruitless. Of the articles described in the U. S. Pharmacopeia VIII, 243 have been deleted; sixty-seven new articles have been added. The loss of 167 titles may be set down as a gain. Moreover, most of the new substances give promise of therapeutic usefulness. Thirty-six are taken over from New and Nonofficial Remedies; nineteen are substances which are in the edition of Useful Drugs now in the press. It cannot be said, however, that all of the additions have been judiciously selected. It is an infelicitous time to add calcium and sodium glycerophosphate just when grave doubts of their therapeutic efficiency are being felt. The addition of the extracts of aconite, hydrastis and viburnum prunifolium is likewise unfortunate. All are superfluous preparations, the first because a drug so powerful that an average dose of the extract is only 10 mg. or ⅙ grain is better given in the form of tincture; the second because hydrastis is a drug of uncertain value, already represented by three preparations, and the third because viburnum prunifolium has been discarded and discredited by the best therapeutic authorities. It must be accounted clear gain, on the other hand, that the deletions include many inert, obsolete or superfluous substances like bismuth citrate, kaolin cataplasm, pipsissewa, coca leaves, ladyslipper, wahoo, cotton root bark, compound acetanilid powder and compound syrup of hypophosphites, not to mention nine salts of iron and thirty-eight fluidextracts of various drugs. Wines, unmedicated and medicated, whisky and brandy are also among the articles dropped.

A number of new features are introduced, such as microscopic standards for powdered drugs, standard abbreviations for titles, the use of the term "mil" instead of "cubic centimeter," and a chapter each on sterilization, diagnostic reagents, biologic assays, electrolytic determination of metals and the determination of alcohol, the melting point, the boiling point and the congealing point.

The chemical nomenclature is substantially the same as that adopted in the previous revision; so is the nomenclature of drugs. The addition of official abbreviations for the Latin titles of drugs will doubtless be found a useful feature.

Less commendable is the change from the familiar "Cc." to "mil." The term "cubic centimeter" is so thoroughly established and so widely used, wherever the metric system is employed, that it cannot be expected that it will be universally displaced by the word "mil." The latter is therefore only a superfluous synonym, and as such out of harmony with the simplicity of the metric system. Perhaps it may even be taken for the abbreviation of "millimeter," "milligram" or other words derived from "mille," which would be equally entitled to the same abbreviation.

AUTOPLASTIC BONE SURGERY. By Charles Davison, M.D., Professor of Surgery, University of Illinois, and Franklin D. Smith, M.D., Clinical Pathologist to University Hospital. Cloth. Price, $3.50 net. Pp. 369, with 174 illustrations. Philadelphia: Lea & Febiger, 1916.

This is an excellent contribution to the subject of bone surgery; it presents in a small, compact volume both the theoretical and the practical considerations of the various phases of transplantation. The changes which the transplant undergoes and the part played by each of its constituents are discussed. The indications for transplantation and the technic, including the necessary instruments, are given. Most of the practical side is devoted to the treatment of fractures. The use of the transplant is urged in recent fractures where the position after attempts at reduction is unsatisfactory. Tuberculosis of the spine and congenital defects and deformities are less extensively discussed. Davison prefers to use a section of the subperiosteally resected fibula as the transplant. Regeneration of the defective shaft from the remaining periosteum is illustrated by some of his cases. The results obtained by pegging with a transplant in case of fracture of the neck of the femur are particularly good. The illustrations are good, and an excellent bibliography is attached.

THE NATIONAL FORMULARY. By Authority of the American Pharmaceutical Association. Prepared by the Committee on National Formulary of the American Pharmaceutical Association. Official from Sept. 1, 1916. Fourth Edition. Cloth. Price, $2.75. Pp. 394. Published by the American Pharmaceutical Association, 1916.

The fourth edition of the National Formulary appears simultaneously with the U. S. Pharmacopeia IX, and is to become official at the same time (September 1). The principles which determine its scope, as frankly set forth in the preface, are apparently the same as those applied, though more faintheartedly, in the compilation of the Pharmacopeia. A statement in the preface of the new National Formulary runs:

"The scope of the present National Formulary is the same as in previous issues, and is based on medical usage rather than on therapeutic ideals. The committee consists entirely of pharmacists, or of men with a pharmaceutical training, and it cannot presume either to judge therapeutic practice or to follow any particular school of therapeutic practice. The question of the addition or deletion of any formula was judged on the basis of its use by physicians and its pharmaceutical soundness. The considerable use by physicians of any preparation was considered sufficient warrant for the inclusion of its formula in the book, and a negligible or diminishing use as justifying its exclusion."

Part I of the volume contains formulas, good, bad and indifferent, including the equivalents of a large number of shotgun proprietaries. Part II contains descriptions of drugs. This is a new feature. The purpose is to provide standards for those drugs not described in the Pharmacopeia but used in N. F. preparations. Many of these drugs were described in the U. S. Pharmacopeia VIII, but have not been included in the ninth revision. Practically all are either worthless or superfluous. Part III contains descriptions of special tests and reagents.

Among the therapeutically useful formulas are those for aromatic castor oil, emulsion of castor oil, sprays or

nebulae, solution of aluminum acetate, solution of aluminum subacetate and wine of antimony. The two last named are also included in "Useful Drugs." Several formulas for new classes of preparations which may or may not be found superior to c[illegible] forms are paste pencils for the application of medicaments to limited areas of the skin, mulls, which are ointments spread like plasters, and fluidglycerates, which are fluidextracts in which glycerin takes the place of alcohol. It should be noted also that, as a result of criticism, the alcohol content of some preparations has been reduced.

As a whole, the present edition of the National Formulary, like its predecessors, is "pharmaceutically useful but not a therapeutic necessity." To say that it is not a therapeutic necessity is to state the matter mildly, since most of the formulas and almost all of the drugs described have been discarded long since by rational therapeutists. So long as there are physicians who prescribe therapeutic monstrosities, however, the druggist should have the aid that is furnished by this book in compounding them. From the pharmacist's point of view, therefore, the book is a valuable one. Physicians who have a scientific training in the pharmacology of drugs will not want it; others will be better off without the temptations offered by its many irrational formulas.

Miscellany

Preventive Medicine and American Research — An Appreciation from Abroad

It is perhaps not sufficiently remembered by us how deeply the world is indebted to American investigators in the field of preventive medicine. American researches have thrown a bright light upon difficult problems concerning what we call tropical disease. Yellow fever may be instanced in this connection. It was in 1900 that the United States government appointed a commission to proceed to Havana, under the leadership of Major Walter Reed, of the Medical Corps, with whom were associated Assistant Surgeons James Carrol, Jesse W. Lazear, and A. Agramonte, to investigate the etiology of this disease. They succeeded in demonstrating among other things that it was spread by the bites of infected stegomyia mosquitoes and in no other way, and Reed's experiments remain as models of scientific research, both for the exactitude with which they were adapted to the points to be proved and for the precautions taken to exclude all sources of error. To their everlasting credit the American soldiers offered themselves fearlessly as subjects for experiment; some of them after being bitten by infected mosquitoes contracted the disease, among them being Carrol and Lazear, the latter of whom died a martyr to science. Based upon these experiments, preventive measures, including mosquito destruction, were formulated at Havana, which for 150 years or more had been a veritable hotbed of yellow fever, but from which since 1901 the disease has completely disappeared, save for a few occasional imported instances. The same methods have been employed more recently in other endemic areas of the disease, such as Rio de Janeiro, Para, Manaos and elsewhere, from which yellow fever has now also vanished. Another great victory was achieved, and an object lesson given to all tropical countries, in the Panama Canal Zone, where yellow fever, malaria and other insect-borne diseases had in the past ravaged the population year by year. The Americans began to construct the Isthmian Canal in 1904, and Colonel (now Surgeon-General) Gorgas, who had formerly served as chief sanitary officer at Havana when Reed's commission had made their experiments, was appointed chief of the new sanitary department. In view of the previous disastrous experiences in this region it is safe to say that without the labors of this sanitary department the Panama Canal would never have been completed. Through the well directed measures of Colonel Gorgas and his staff, yellow fever, malaria, blackwater fever, dysentery and other diseases were brought entirely under control, and the general death rate among the laborers, which was 52.45 per 1,000 in 1904 fell to 20.49 in 1912. Briefly, what was once an intensely unhealthy area became salubrious, and the doctrines of Manson and Ross were triumphantly established. The work at Panama, like that at Havana, is always alluded to by writers on germane subjects, but its detailed history would repay more attention than it has received, while there are other valuable American contributions to preventive medicine which are frequently passed over. The investigation of that mysterious disease pellagra has been very carefully prosecuted in the United States in recent years, by the McFadden Thompson Commission of New York and other workers, and already with encouraging results. A great decrease has recently taken place in America and other parts of the world, including Egypt, in the incidence of ankylostomiasis or hookworm disease, due partly to the efforts of Ashford and others with the assistance of the American International Commission, an offshoot of the Rockefeller Foundation. The etiology of exanthematic typhus was independently worked out by two groups of American investigators, Anderson and Goldberger, and Ricketts and Wilder; it was only an unlucky chance which prevented the earlier publication of their results before those of M. Nicolle and his collaborators in Tunis had made public their incrimination of the body louse as the insect transmitter of this disease. The credit, therefore, of the discovery must be shared by the Americans. Much new light has been thrown upon cerebrospinal fever and epidemic poliomyelitis by American workers, and American military and other medical officers stationed in the Philippines have contributed greatly to the general fund of knowledge of tropical diseases, particularly as regards beriberi. Nor do these examples exhaust the list, but they will suffice to show some at least of our indebtedness in preventive medicine to scientific workers in America.

Our American visitors will doubtless find a good deal that is new to them in our arrangements for the care of the sick and wounded, for the prevention of disease among our troops at home and in the field, and for maintaining in other ways the health and efficiency of the British army. It may be mentioned in this connection that although antityphoid inoculation originated in England, the adoption of the procedure in America helped largely to confirm its value and assisted in gaining its acceptance by our own military authorities. We understand that only one officer of the British army has died from typhoid fever since the commencement of the war, and we believe that at the present moment there are not more than two dozen typhoid cases among our troops. This remarkable freedom of an immense army in the field from what has been generally deemed a necessary curse is greatly due to the systematic adoption by the authorities in the United States of Wright's work.—*Lancet*, London, June 3, 1916.

Date of Conception and Sex of Child in Relation to Menstruation

THE JOURNAL mentioned last December, p. 2205, that Siegel in Germany is charting data obtained by comparing the date of a soldier's brief furlough with the pregnancy of his wife. The *Ugeskrift* brings an abstract of his latest report on the subject. The charts of the later series of 220 cases show essentially the same curves as his first series of 100 cases. They demonstrate that conception was most likely to occur when the husband reached home during the first days after cessation of the menses. The probability of conception then grew progressively less until almost constant sterility was the rule for the women during the days preceding the next menstruation. The findings thus confirm the usual assumption. Siegel has been studying the data further seeking to discover laws predetermining the sex of the child. He divides the intermenstrual period into three phases: (1) from the first day of menstruation to the ninth day; (2) from the tenth to the fourteenth day, and (3) from the fifteenth to the twenty-second day. The remaining six days are not con-

sidered, as the woman may be regarded as temporarily sterile during this phase. He was able to obtain data along these lines in eighty cases. The pregnancies dating from the first period gave 37 boys and 7 girls; second period, 4 boys and 8 girls, and third period, 3 boys and 20 girls. Omitting from the figures the illegitimate children—as affording possibly less reliable data—the proportions were: first period, 19 boys and 1 girl; second period, 2 boys and 6 girls, and third period, 1 boy and 15 girls.

Medicolegal

Adulteration and Misbranding

(United States vs. Forty Barrels (U. S.), 36 Sup. Ct. R. 573)

The Supreme Court of the United States, in this case wherein forty barrels and twenty kegs of "coca-cola," claimed by the Coca-Cola Company of Atlanta, Ga., were libeled for condemnation under the food and drugs act, reverses the judgment of the Circuit Court of Appeals, which affirmed a judgment of the District Court entered on a verdict directed in favor of the company. The supreme court, in an opinion delivered by Mr. Justice Hughes, discusses adulteration and misbranding under the act. The court says, among other things, that a description of the purpose of the statute would be inadequate which failed to take account of the design to protect the public from lurking dangers caused by the introduction of harmful ingredients, or which assumed that this end was sought to be achieved by simply requiring certain disclosures. It cannot be assumed that simply because a prepared "food" has its formula and distinctive name, it is not, as such, "adulterated." Component parts, or constituents, of the article which is the subject of the described traffic are not excluded, but are included in the definition. "Adulteration" is not to be confused with "misbranding." The fact that the provisions as to the latter require a statement of certain substances if contained in an article of food, in order to avoid "misbranding," does not limit the explicit provisions of Section 7 as to adulteration. Both provisions are operative. "Adulteration" is "any" added poisonous or "other added deleterious ingredient," provided it "may render such article injurious to health." Proprietary foods sold under distinctive names are within the purview of the provision. Not only is "food" defined as including articles used for food or drink, "whether simple, mixed or compound," but the intention to include "proprietary foods" sold under distinctive names is manifest from the provisos in Section 8. The fundamental contention of the claimant was that a constituent of a food product having a distinctive name cannot be an "added" ingredient. In such case, the standard is said to be the food product itself which the name designates. It must be this "finished product" that is "adulterated." If this were so, the statute would be reduced to an absurdity. It does not seem to the court to be a reasonable construction that in the case of "proprietary foods" manufactured under secret formulas Congress was simply concerned with additions to what such formulas might embrace. Undoubtedly, it was not desired needlessly to embarrass manufacturers of "proprietary foods" sold under distinctive names, but it was not the purpose of the act to protect articles of this sort regardless of their character. Only such food products as contain "no unwholesome added ingredient" are within the saving clause, and in using the words quoted the court is satisfied that Congress did not make the proprietary article its own standard. Equally extreme and inadmissible is the suggestion that where a "proprietary food" would not be the same without the harmful ingredient, to eliminate the latter would constitute an "adulteration" under Section 7, Subdivision 3, by the abstraction of a "valuable constituent." In that subdivision Congress evidently refers to articles of food which normally are not within the condemnation of the act. The court can see no escape from the conclusion that the caffein was in this case an "added" ingredient within the meaning of the statute. On the question of whether it was a poisonous or deleterious ingredient which might render the article injurious to health, there was a decided conflict of competent evidence, and it is sufficient to say that the question was plainly one of fact which was for the consideration of the jury. The court also holds that there was error in directing a verdict for the claimant on the count charging misbranding or that the expression "coca-cola" represented the presence in the product of the substances coca and cola, and that it contained "no coca and little if any cola." To call a compound by a name descriptive of ingredients which are not present is not to give it "its own distinctive name"—which distinguishes it from other compounds—but to give it the name of a different compound. That is not protected by the proviso allowing distinctive names, unless the name has achieved a secondary significance as descriptive of a product known to be destitute of the ingredients indicated by its primary meaning.

Unsuccessful Treatment of Fracture and Failure to Discover Dislocation

(Houghton vs. Dickson (Calif.), 155 Pac. R. 128)

The District Court of Appeal of California, Second District, reverses a judgment for $3,500 damages obtained by the plaintiff for alleged malpractice in the treatment of an injury to his right arm due to the kick of a horse, January 25. It appeared that the ulna was fractured, and that, after receiving emergency treatment, the plaintiff, on the day following the injury, placed himself in the care of the defendant, who, after an examination with a fluoroscope, set the arm, using splints to retain the broken bones in place. On the following day, the defendant discovered that it would be necessary to wire the fractured ends of the bone, which he did at a hospital. The defendant dressed, bandaged, and otherwise treated the arm until March 29, on which date the plaintiff consulted another physician. The latter found a dislocation at the elbow of the radius, that there had been no union of the ends of the fractured bone, that the wires used in securing the same had broken, and that pus had developed in the wound, all of which conditions, except the formation of pus in the wound, were indicated by a roentgenogram taken March 29. The court holds that the evidence wholly failed to show any lack of care and skill on the part of the defendant in setting and treating the fractured bone, and failed to show when the dislocation occurred, or that a physician in the exercise of ordinary care and skill should, under the circumstances shown, have discovered the dislocation and treated it. Assuming that the radius was dislocated at the time when the defendant undertook the treatment of the fractured bone, or that it occurred thereafter during the treatment, such fact alone did not show that the defendant was lacking in ordinary care and skill in not discovering such condition. So far as it appeared, the defendant was called on to set the fractured bones. No intimation was given him of any injury to the elbow. Whether or not the defendant should, under the circumstances, in the exercise of ordinary and reasonable care and skill, have discovered such condition, assuming it to have existed, was a question for expert testimony, and none was offered. Conceding that the physician consulted March 29 had no difficulty then in discovering the dislocation, nevertheless that fact did not show a want of ordinary care and skill on the part of the defendant in failing to discover it, since the other physician, by reason of superior learning and advantages, might have been a man possessing far more than ordinary skill in his profession. The implied contract on the part of the defendant was, not only that he possessed that reasonable degree of learning and skill possessed by others of his profession, but that he would use reasonable and ordinary care and skill in the application of such knowledge to accomplish the purpose for which he was employed, and if he possessed such reasonable degree of learning, and in the treatment of the plaintiff's injury exercised ordinary care and skill in applying it, he was not liable for results that followed. In the absence of evidence to the contrary, the law will presume the exercise of a reasonable degree of care and skill.

Society Proceedings

COMING MEETINGS

Am. Assn. for the Study and Prev. of Inf. Mort., Milwaukee, Oct. 19-21.
American Association of Railway Surgeons, Chicago, Oct. 17-19.
American Roentgen Ray Society, Chicago, Sept. 27-30.
Colorado State Medical Society, Glenwood Springs, Sept. 5-7.
Idaho State Medical Association, Twin Falls, Oct. 5-6.
Indiana State Medical Association, Ft. Wayne, Sept. 27-29.
Kentucky State Medical Association, Hopkinsville, Oct. 24-27.
Minnesota State Medical Association, Minneapolis, Oct. 11-13.
Missouri Valley Medical Society, Omaha, Sept. 21-22.
Nevada State Medical Association, Reno, Oct. 10-12.
New Mexico Medical Society, Albuquerque, Oct. 11-13.
Oregon State Medical Association, Portland, Sept. 14-15.
Pennsylvania State Medical Society, Scranton, Sept. 18-21.
Utah State Medical Association, Salt Lake City, Sept. 12-13.
Virginia State Medical Society, Norfolk, Oct. 24-27.
Wisconsin State Medical Society, Madison, Oct. 4-6.

MICHIGAN STATE MEDICAL SOCIETY

Fifty-First Annual Meeting, held at Houghton, Aug. 16-17, 1916

The President, DR. A. W. HORNBOGEN, Marquette, in the Chair

The Michigan Campaign against Tuberculosis

DR. WILLIAM DE KLEINE, Lansing: The state legislature has appropriated from the general fund of the state $50,000 for the fiscal year ending June 30, 1916, and the further sum of $50,000 for the fiscal year ending June 30, 1917, for the purpose of making a tuberculosis survey of the state, the employment of medical men and nurses and other experts to make the survey, and the organization of antituberculosis societies throughout the state and the prosecution of a campaign to lessen the ravages of the disease. The county has been adopted as a working unit. A three weeks' campaign is planned in each one. The work is advertised through the newspapers, through window cards, and by calls on physicians and patients. Free examinations for tuberculosis are offered at a public clinic. Chest examinations are made, and patients advised of the findings. During the week following the examinations, the nurses visit the homes of all persons found with positive or suspicious cases. They also call on all the physicians, and they are advised of the findings in their individual patients. At the same time, health talks are given in all the schools, and public lectures wherever opportunity affords.

Since Oct. 1, 1916, twenty-six counties have been visited. More than 9,000 people have been examined. More than 2,000 cases of tuberculosis have been reported, and the names of more than 1,700 persons with suspicious cases have been filed. Nurses have visited the homes of more than 3,700 people. Thousands of educational articles for newspapers have been written, mostly in the form of news items, as well as hundreds of editorials. Hundreds of lectures and health talks have been given in schools. Several counties have been induced to consider the question of erecting a tuberculosis sanatorium. Several city councils and boards of health have been induced to consider the question of employing a full-time health officer. Three of them have taken action.

The medical profession is also interested in the problem of whipping tuberculosis. Clinics are held for the benefit of the local physicians as much as for the patients. All physicians are invited to cooperate. From 50 to 100 per cent. of them come to see the work. Many of them spend a whole week.

The Tuberculosis Problem

DR. ARTHUR F. FISCHER, Hancock: We should teach the laity that any of the following symptoms should arouse their suspicions and cause them to seek an interpretation: 1. A succession of colds without the energy to overcome them. 2. Persistent loss of weight without any readily explainable cause. 3. A general feeling of fatigue and malaise not explainable by normal exertion. 4. Flush of feverishness arising late in the afternoon. 5. Spitting of blood. 6. Persistent cough extending over a period of one month, especially if not preceded by nasal or throat symptoms. 7. Digestive disturbances, especially when accompanied by any of the foregoing. 8. Night sweats.

In studying chest symptoms it is essential first to know why you pound the chest and apply the ear to the mysterious column of air in the rubber tube. The entire object is to elicit the consistency of the lung tissue that lies between the normal air tubes and the surface. You must be able to detect a normal chest when you hear it before you can begin to suspect the abnormal. All these signs are studied by comparison of the right and left lungs. Comparative percussion of the two sides will elicit any dulness. Comparative auscultation of the inspiratory breath sounds in normal and in forced breathing, and finally a study of the inspiration after a definite cough are made.

The diagnosis of tuberculosis is a time-consuming proposition. It requires a patient stripped to the waist and careful going over the various sections of the lung with trained ear to elicit any shade of abnormality. This cannot be done in five minutes nor often in less than two hours, and sometimes it requires repeated examinations, coupled with weeks of temperature records, and elimination of symptoms.

The Radial Cholesterin Stone in Gallbladder Surgery

DR. HENRY J. VANDENBERG, Grand Rapids: The radial cholesterin stone occurs in the gallbladder as a result of stagnation alone. Its existence tends to keep up the stagnation which predisposes to infection. The original cause of stagnation may have disappeared. A noninfected gallbladder containing a cholesterin stone becoming infected may result in a hydrops, formation of a mixed cholesterin stone by apposition of cholesterin-pigment-calcium, or the formation of secondary stones. In many cases of multiple gallstones, a radial cholesterin stone may be found among them. The presence of a radial cholesterin stone alone without infection does not produce symptoms. Infection, then, is not necessary for gallstone formation; stagnation alone is enough. Stagnation plus infection causes the formation of ordinary gallstones.

Insanity in Pelvic Diseases in Women

DR. WALTON P. MANTON, Detroit: Pelvic disease is of frequent occurrence among insane women. In the great majority of cases the insanity is the product of a combination of causes. Occasionally cases present themselves in which the insanity is apparently due to the direct influence of the pelvic pathologic condition, as following continued brooding over the presence of a tumor or the like; but such instances are of so infrequent occurrence as to be almost negligible.

Relationship Between Gynecologic and Neurologic Conditions

DR. REUBEN PETERSON, Ann Arbor: Cases naturally fall into certain groups. These types of cases are not always distinct. As a rule they can be fairly classified as follows: 1. Women with neurologic symptoms whose pelvic organs are anatomically and physiologically normal. 2. Women with neurologic symptoms whose genital organs are anatomically normal, but whose functions are abnormal. 3. Women with derangements of the nervous system whose pelvic organs are unquestionably diseased, and where the disease may be aggravated, but does not necessarily cause the nervous manifestations. 4. Women of naturally good nervous organizations, whose nervous manifestations have followed on, and hence apparently are due to true pelvic lesions.

Perhaps the largest number of individuals in the first group are to be found among the epileptics, if we may class this disease among the functional neuroses. In many women who are epileptics the attacks come on only at the menstrual periods, later being regular and painless and the pelvis perfectly normal. This leads to the faulty deduction that removal of the ovaries and the resulting cessation of menstruation will lead to the stoppage of the epileptic seizures, notwithstanding the mass of clinical evidence to the contrary. What has been said about the epileptic is just as true for the woman who suffers from hysteria, neurasthenia, neuralgias in various parts of the body, hyperesthesia and anesthetic areas.

In the second group belongs the great majority of young unmarried women suffering from some form of functional

nervous trouble with manifestations in the pelvis, although the pelvic organs are apparently normal. Such patients not infrequently have poor family histories, coming from stock with unstable nervous systems, where there are many instances of alcoholism, epilepsy, hysteria and mental peculiarities. Pelvic examinations in women belonging to this group are not easy to make without anesthesia, and bimanual recto-abdominal examinations, especially in fleshy women, are not always satisfactory. What such patients need is the most common sense general treatment; change their occupations, curb their intellectual ambitions, see that their bodies as well as minds are exercised, encourage marriage, and take away the fear of childbirth from their minds.

In the third group there is a distinct relationship between the pelvic lesions and the neuroses, that is, the latter are usually made worse by the irritation of the local disease. It is necessary to use the greatest judgment in determining the degree of such relationship, and here the history of the case will prove most valuable.

In the fourth group the natural normal nervous organization has been changed to an abnormal one from the irritation due to neglected pelvic lesions. The headache, backache, insomnia, mental depression, etc., are directly caused by the pelvic trouble, and when this is rectified they disappear and the patient reports that she never felt better in her life.

DISCUSSION

DR. R. R. SMITH, Grand Rapids: Of the patients who present themselves to us with functional nervous conditions, we can distinguish two main elements more or less clearly. The first is the element of hyperirritation or increased irritability or sensitiveness or nervousness. What symptoms are presented? We have, in the first place, an increase in the reflexes. They are exaggerated, and the coordination is more or less interfered with. 2. We have supersensitiveness to all sensory impressions. 3. There is a great tendency toward emotional disturbance which is distinctly increased. 4. We have disturbances of the various functions of the body—digestion, menstruation, urination and other functions.

To what may the state of increased irritability be due? We have irritation from the intake of certain drugs, such as strychnin and caffein. These all cause increased irritability. 2. It may be due to the activity of certain ductless glands. Increased irritability of hyperthyroidism is well known. Increased irritability that takes place due to activity of the thyroid is well known. 3. We have a miscellaneous group of cases due to unsatisfied sexual desire and to intellectual work and other influences that are well recognized. Then there is a group due to intestinal intoxication so-called. There is increased nervousness or irritability associated with intestinal intoxication. Pain in the miscellaneous group of cases is an important cause. Fatigue is due to various influences, but, speaking of it in the sense of overwork or a lack of sleep, it is a potent cause of increased irritability. Frequent emotional disturbances to which these patients are subject leads to marked increased irritability.

What are the characteristics of such patients? There is a lack of moral stamina, of morale, of fortitude. The patient is more or less emotional than other people. Suggestibility is increased in the hysterias. Normally, when any of us receive an unpleasant impression or unpleasant idea, one which interferes with our interest, we do one of three things. We act on it; we take such action out in fancy or we dismiss it from our minds. This is not so with the neurotic patient. When an idea antagonistic to her interests enters her mind it stays. It becomes distorted and exaggerated; in other words, it acts as a foreign body. This is an important thing because it leads to the obsessions, doubts, phobias, fixed ideas which we so constantly see in these patients and which are so hard to eliminate and which are so frequently associated with the emotions.

What may be the causes of traumatic symptoms in a patient fundamentally of neurotic mind? These causes may be divided into two groups, the acute traumas and those of slower action. The actual ones are the railroad accidents, serious financial loss and acute illness and the loss of a friend or a near relative, or surgical operation. The matter of work, lack of work, or unsuitable work sometimes may be the cause of bringing on symptoms in such a patient. Lack of proper recreation is not a very infrequent cause. There are disturbances of the sexual relations, and I am using the term sexual relation in the broadest sense. Jealousy sometimes plays a part. In short, pain in itself in the pelvis means nothing. It may be due to organic trouble, or it may be simply a matter of the patient's nervous organization.

DR. C. B. BURR, Flint: It is essential to look for causes because they are the fundamentals in connection with the class of cases under consideration. We must not assume too much from some particular thing which we may find is the causative factor. We are weighing more and more all these things and are looking deeper and deeper for ultimate causes. Great harm is sometimes done in yielding to the disposition of the patient. This tendency is not confined to one sex. Some of the patients are obsessed. They hark back to something in the past, and those are the things frequently in neurotic cases with which shock, humiliation or experiences of that kind have been associated. That constitutes the complex, and that is the determining subconscious or unconscious tendency in the life of the individual.

DR. J. HENRY CARSTENS, Detroit: At one time it was thought that by operating on insane patients we would be able to reduce the number of inmates in asylums very materially, but we found in many instances that the removal of the pelvic lesions did not cure the insanity. The question resolves itself into one of diagnosis. We should strive to make a diagnosis in every case. There are functional troubles of the pelvic organs which have their origin very largely in the mind of the patient. If we can relieve them, we do a great deal toward restoring her to a normal condition. In a great many of these cases the whole trouble is with the thyroid. Some of these patients are syphilitic, and their true conditon is not recognized. Some of these troubles are due to bad training and bad bringing up. These patients indulge in a vicious line of thinking, and what many of them need is advice along the line of clean thoughts and clean thinking, and not operation.

DR. REUBEN PETERSON, Ann Arbor: We find in the obstetric and gynecologic clinic that about 5 per cent. of the patients who present themselves have syphilis, and a great many of the patients whose cases bothered us before can now be explained from this cause.

Sarcomatous Degeneration of Uterine Fibroids

DR. FRANK C. WITTER, Petoskey: The following points may be noted: 1. Sarcomatous degeneration of any fibroid is the most frequent type of sarcoma of the uterine body wall. 2. The frequency of occurrence varies from 1.5 to 4.3 per cent. of all uterine fibroid growths. 3. Considering the frequency of occurrence of fibroids, a systematic microscopic search of the tumors removed will show a higher percentage of occurrence. 4. The mortality rate may be diminished if early operation is advised in all cases. 5. Surgical removal is the only treatment that can be safely employed.

DISCUSSION

DR. RICHARD R. SMITH, Grand Rapids: I would doubt very much some of the statistics relative to the frequency of sarcomatous degeneration of fibroid tumors, for a great deal depends on what the pathologist calls sarcoma. Pathologists vary as to what is malignant and what is not, and this causes a vast amount of difference in the statistics, from 1 per cent. up to 5 per cent. One other trouble in connection with this question is that in these tumors we do not know just where the borderline is between what is malignant and what is not. The line of demarcation between malignancy and benignancy is extremely fine.

Bacteriology of Acute Ear Infections

DR. EDWARD J. BERNSTEIN, Kalamazoo: Spontaneous cure takes place in the vast majority of cases, but most of the treatment as ordinarily applied is futile. Some patients have mastoid involvement from their incipiency, notably the cases of infection with the *Streptococcus mucosus* or the *Streptococcus hemolyticus*. There should be prompt opening of the drum and microscopic examination of the fluid obtained. A vaccine should be prepared in case of need.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

The American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

August, LXXIV, No. 464

1 The Ductless Glands and Their Relation to the Treatment of Functional Gynecologic Diseases. M. Rabinovitz, New York. —p. 177.
2 Results of Routine Study of Placenta. J. M. Slemons, New Haven, Conn.—p. 204.
3 Postpartum Hemorrhage. F. W. Rice, New York.—p. 215.
4 Psychic Vaginismus; Report of Two Cases. P. H. Williams, New York.—p. 226.
5 Study of 117 Cases of Ectopic Gestation. E. Foskett, New York. —p. 232.
6 New Method of Calculating the Required Posterior Sagittal Diameter of the Outlet in a Lateral Contraction of the Pelvis. C. D. Daniels, Philadelphia.—p. 238.
7 Management of Pregnancy and Labor Complicated by Heart Disease. Augustus A. Hussey, Brooklyn.—p. 240.
8 Pregnancy Complicated by Cancer of Cervix. V. L. Zimmermann, Brooklyn.—p. 251.
9 The Teacher's Inheritance. W. W. Chipman, Montreal, Canada. —p. 256.
10 Elizabeth Steel Magee Hospital and Its Work. C. E. Ziegler, Pittsburgh.—p. 265.
11 Rarer Forms of Toxemia of Pregnancy. M. Hornstein, New York. —p. 270.
12 Treatment of Tragic Forms of Rupture in Ectopic Pregnancy by Vaginal Section and the Application of a Clamp. W. W. Babcock, Philadelphia.—p. 276.
13 Cesarean Section for Strangulated Ovarian Cyst Complicating Labor. R. Cadwallader, San Francisco.—p. 280.
14 Fried Wound Dressings. D. H. Stewart, New York City.—p. 282.

American Journal of Physiology, Baltimore

August, XLI, No. 2

15 Some Metabolic Effects of Bathing in the Great Salt Lake. II. H. I. and H. A. Mattill.—p. 143.
16 *Relation Between Amount of Catalase in Different Muscles of Body and Amount of Work Done by These Muscles. W. E. Burge, Chicago.—p. 153.
17 Study of Blood Gases During Hibernation in the Wood-Chuck; the Respiratory Capacity of the Blood. A. T. Rasmussen, Ithaca, N. Y.—p. 162.
18 The Ductless Glands and Hibernation. F. C. Mann, Rochester, Minn.—p. 173.
19 *Regulation of Blood Volume After Injections of Saline Solutions. Studies of Permeability of Cellular Membranes. I. L. J. Bogart, F. P. Underhill and L. B. Mendel, New Haven, Conn. —p. 189.
20 Action of Saline-Colloidal Solutions on the Regulation of Blood Volume: Studies of Permeability of Cellular Membranes. II. L. J. Bogart, F. P. Underhill and L. B. Mendel, New Haven, Conn.—p. 219.
21 *Influence of Alkaline-Saline Solutions on Regulation of Blood Volume: Studies of Permeability of Cellular Membranes. III. L. J. Bogart, F. P. Underhill and L. B. Mendel, New Haven, Conn.—p. 229.
22 Influence of Iodin and Sodium Iodid on Circulation. W. Salant and A. E. Livingston, Washington, D. C.—p. 234.
23 Thromboplastic Action of Cephalin. J. McLean, Baltimore.—p. 250.
24 *Rapidity With Which Alcohol and Some Sugars May Serve as Nutriment. H. L. Higgins, Boston.—p. 258.

16. **Effect of Work on Catalase of Muscle.**—The amount of catalase in the different muscles of the body, Burge says, varies with the amount of work done by these muscles; those doing the greatest amount of work contain most catalase, while the muscles doing the least work contain the least catalase. By increasing or decreasing the external physical work of a muscle, the amount of catalase is correspondingly increased or decreased. If the external physical work of a muscle such as the pectoralis of pigeons is reduced practically to zero, the amount of catalase is reduced by approximately 38 per cent. Catalase is greater in amount in the muscles of warm blooded animals in which oxidation is more intense than in corresponding muscles of cold blooded animals in which oxidation is less intense.

19. **Regulation of Blood Volume and Saline Solutions.**—The following is a summary of the more important conclusions drawn by the authors: The regulation of the blood volume in normal animals is both rapid and efficient. The activity of the kidneys is not essential to this regulation of the blood volume. In conditions of nephritis, inability to restore the blood volume to normal after injections of saline solution usually manifests itself. Morphin sulphate produces an effect on the regulation of the blood volume comparable with that resulting from a condition of nephritis. Restoration of the blood to normal after intravenous injections of saline solutions is not primarily effected by the transfer of the excess of fluid from the blood vessels to the thoracic lymphatic system. The tissues act as a reservoir for this fluid. The capacity of the tissues of rabbits to absorb fluid is approximately four times the normal blood volume of the animal.

21. **Action of Alkaline-Saline Solutions on Blood Volume.**—The addition of alkali, up to 0.4 per cent. sodium carbonate, to the fluid injected, the authors state, has no apparent effect on the regulation of the blood volume either in normal or in nephritic animals. The rate at which, and the extent to which, injected fluid leaves the blood vessels is unaffected by the addition of sodium carbonate.

24. **Nutritive Value of Alcohol and Some Sugars.**—By determination of respiratory quotients in periods of three and four minutes' duration on subjects without breakfast, it was concluded by Higgins that (*a*) alcohol begins to be burned in appreciable quantity in from five to eleven minutes after taking; with some subjects the combustion began more quickly than with others; (*b*) sucrose, lactose and levulose begin to be burned quite as soon as alcohol, if not sooner; (*c*) glucose and maltose are not utilized as food as soon as the other sugars or alcohol, approximately twenty to thirty minutes elapsing before their combustion plays an important part in the metabolism. There is a distinct difference between the metabolism in men of glucose and of levulose and galactose as shown by a study of the gaseous exchange, especially the respiratory quotients.

Annals of Surgery, Philadelphia

August, LXIV, No. 2

25 Preparedness. R. G. LeConte, Philadelphia.—p. 129.
26 Surgical Lessons of European War. A. M. Fauntleroy, Washington, D. C.—p. 136.
27 Localization and Extraction of Projectiles and Shell Fragments. J. M. Flint, New Haven, Conn.—p. 151.
28 Methods of Handling Injuries on Transportation Systems and Wound Treatment. K. A. J. Mackenzie, Portland, Ore.—p. 184.
29 *Chronic General Infection With Bacillus Pyocyaneus. L. Freeman, Denver, Colo.—p. 195.
30 Etiology of Surgical Scarlatina. J. B. Roberts, Philadelphia.—p. 203.
31 *Melanotic Cancer. W. B. Coley and J. P. Hoguet, New York. —p. 206.
32 Diagnosis and Treatment of Trifacial Neuralgia. E. H. Beckman, Rochester, Minn.—p. 242.
33 Dislocation of First Cervical Vertebra. A. F. Jonas, Omaha, Neb.—p. 248.
34 Treating Cysts of the Breast by Evacuation of Fluid. F. J. Shepherd, Montreal, Canada.—p. 254.

29. **Chronic General Pyocyaneus Infection.**—The features of especial interest in Freeman's case are: Its extreme chronicity, having lasted nearly eleven months. The typical neuralgic pains followed by paresis and muscular atrophy. The absence of the bacillus pyocyaneus from the blood and its presence in the bile. The absence of any discoverable point of infection. Recovery following drainage of the gall-bladder and the use of an autogenous vaccine. The occurrence of cirrhosis of the liver. The presence of ascites and pleural effusion, which promptly disappeared, the former following an abdominal incision and the latter a single aspiration. The satisfactory recovery after so severe and protracted an illness, with the exception of a moderate paresis of the lower limbs, which seems to be improving.

31. **Melanotic Cancer.**—The authors emphasize that the chief hope of reducing the mortality of this extremely fatal type of neoplasm must rest with prophylactic treatment, i. e., the surgical removal of all pigmented moles, as soon as observed and particularly in all cases in which the anatomic locality renders them liable to irritation or to external injury. If this rule is rigidly followed the number of cases will be markedly diminished. Ninety-one cases are analyzed.

Archives of Internal Medicine, Chicago

August, XVIII, No. 2

35 *Dietary Deficiency as Etiologic Factor in Pellagra. E. B. Vedder, Washington, D. C.—p. 137.
36 *Incidence of Pellagra in Spartanburg County, S. C., and Relation of Initial Attack to Race, Sex and Age. J. F. Siler, P. E. Garrison and W. J. McNeal, New York.—p. 173.
37 *Lime Deficiency of Diabetes. M. Kahn and M. H. Kahn, Pittsburgh.—p. 212.
38 *Inactivation of Pepsin: Effects of Various Salts and Alkaline Substances. W. W. Hamburger and B. Halpern, Chicago.—p. 228.
39 *Rate of Absorption of Various Digitalis Preparations from Gastro-Intestinal Tract. C. C. Haskell, C. S. McCants and F. P. Gardner, Richmond, Va.—p. 235.
40 *Ventricular Escape; Cases Showing a Ventricular Rate Greater Than That of the Auricles. P. D. White, Boston.—p. 244.
41 Study of Proteins in Urine; Comparison of Gravimetric and Nephelometric Methods for Their Estimation. J. T. W. Marshall, H. W. Banks and S. S. Graves, New York.—p. 250.
42 *Transient Auricular Fibrillation: An Electrocardiographic Study. E. B. Krumbhaar, Philadelphia.—p. 263.

35. **Dietary Deficiency Cause of Pellagra.**—There is a certain similarity between pellagra and other known deficiency diseases, namely, beriberi and scurvy. Much of the evidence that has been presented as a proof of the infectious nature of pellagra can be explained in accordance with a deficiency hypothesis. A deficiency is demonstrable in the diets of most pellagrins. This deficiency appears to Vedder to result from the too exclusive use of wheat flour, in association with cornmeal, salt meats and canned goods, foods that are known to be deficient in vitamins. Changes in the diet of the people of the South have occurred during the past ten or fifteen years. Since we do not know all the changes that have occurred, and cannot judge accurately the importance of the known changes the author holds that it is unscientific to assume that the recent increase in pellagra cannot be due to such changes. The hypothesis that pellagra is caused by a deficiency is very plausible and must be taken into consideration in subsequent studies of this disease.

36. **Pellagra in South Carolina.**—Several points are made by the authors which bear emphasis. The disease has attacked the white race more than the negroes. The death rate in initial attack has been 41.8 per cent. for negroes and 12 per cent. for the white race. Pellagra was very rarely observed under the age of 1 year. Evidence of residence very close to an antecedent pellagrin has usually been quite clear in the cases of infantile pellagra. The milk of pellagrous mothers cannot be regarded as the cause or the vehicle of the cause of pellagra in infants. The age period 12 to 16 years is relatively free from initial attacks of pellagra. From age 20 to age 50 years, the number of women attacked by pellagra gradually diminishes and the number of men attacked gradually increases. The lower incidence rate and the higher death rate for those attacked have occurred in negroes in conjunction with greater poverty of this race and a diet poorer in quality, quantity and variety. Incidence has been lowest in the sex and age groups of negroes most completely segregated from white pellagrins.

37. **Lime Deficiency in Diabetes.**—The lime metabolism of five diabetic patients was studied by the Kahns. The patients were kept on a Folin diet, no sugar being given, and portions of the mixed diet were taken to the laboratory for analysis. The urine and feces were collected daily and analyzed. The experiments were conducted for nine days. The patients were in the mild stages of diabetes, none of them suffering from any discomfort. There was no acidosis, no ulceration, no pruritus. The glycosuria varied in the different cases from 1.5 to 2.7 per cent. It was found that the patients on this diet constantly lost lime from their bodies. The administration of calcium intravenously to diabetic patients causes a marked fall in the glucose excretion. It induces a gradual decline in the glycemia of the patients. The quantity of urine excreted is reduced. Certain symptoms ascribable to the diabetes are relieved by this treatment. Acetone, diacetic acid and betaoxybutyric acid never developed in these cases.

38. **Inactivation of Pepsin.**—The inhibition of pepsin by sodium chlorid and sodium phosphate suggests the possibility of the clinical use of these salts in the prevention and cure of chronic gastric ulcer. The strong neutralizing value of sodium carbonate, magnesium carbonate and calcium hydroxid suggests the possibility of their use under similar conditions.

39. **Absorption of Ingested Digitalis.**—According to the authors the official tincture of digitalis is absorbed more rapidly from the gastro-intestinal tract of cats than is the infusion made from the same leaf. The three special preparations of digitalis, namely, digipuratum, digalen, and digipoten, seem to possess no decided advantage over the official tincture. Digalen is absorbed more rapidly, but the variability in strength and the low standard of strength, together with the high cost of this preparation, more than offset this possible advantage.

40. **Ventricular Escape.**—Two types of ventricular escape are described by White: (1) the occasional type, in which the automatic stimulus production in the atrioventricular node is released by depression, and hence slowing, of the pacemaker in the sinu-auricular node, and (2) the rare type, in which the atrioventricular nodal center of stimulus production is so irritable that it escapes from the control of the sinu-auricular node. Both factors, depression of the upper node and irritation of the lower node may play a part in ventricular escape in a single case, as in an instance reported, in the production of which digitalis apparently was the important factor. Three cases are recorded in which the ventricular rate exceeded that of the auricles.

42. **Transient Auricular Fibrillation.**—Four cases are described by Krumbhaar in which the transition of the cardiac mechanism was observed from normal rhythm to auricular fibrillation and back again. In two others the development of permanent auricular fibrillation was observed.

Archives of Pediatrics, New York

August, XXXIII, No. 8

43 Nature, Manner of Conveyance and Means of Prevention of Infantile Paralysis. S. Flexner, New York.—p. 562.
44 Acute Poliomyelitis: Clinical Types of Disease. H. Koplik, New York.—p. 575.
45 Importance of Present Epidemic of Poliomyelitis. H. Emerson, New York.—p. 584.
46 Abortive and Non-Paralytic Cases of Poliomyelitis — Their Importance and Their Recognition. G. Draper, New York.—p. 590.
47 Present Epidemic of Poliomyelitis; Types Which It Presents. L. C. Ager, Brooklyn.—p. 592.
48 Laboratory Aids in Diagnosis of Poliomyelitis. J. B. Neal, New York.—p. 595.
49 Orthopedic Observation in Treatment of Anterior Poliomyelitis. C. Wallace, New York.—p. 599.
50 Treatment of Acute Stage of Anterior Poliomyelitis. M. H. Bass, New York.—p. 611.

Boston Medical and Surgical Journal

August 10, CLXXV, No. 6

51 Diagnosis and Management of Vasomotor Disturbances of Upper Air Passages. J. L. Goodale, Boston.—p. 181.
52 Asthma in Children; II. Its Relation to Anaphylaxis. F. B. Talbot, Boston.—p. 191.
53 Preparation of Vegetable Food Proteins for Anaphylactic Tests. R. P. Wodehouse, Cambridge, Mass.—p. 195.
54 *Normal Reaction of Skin to Stroking. E. A. Tracy, Boston.—p. 197.
55 Protein Extracts in States of Hypersensitization. H. M. Bater and C. Floyd, Boston.—p. 199.
56 *Hay-Fever: Its Treatment With Autogenous Vaccines and Pollen Extract. L. S. Medalia, Boston.—p. 201.
57 Embolic Pneumonia Following Mastoid Operation; Report of Three Cases. G. L. Richards, Fall River, Mass.—p. 206.

August 17, No. 7

58 Fractures of Lower End of Humerus. W. E. Ladd, Boston.—p. 220.
59 Massachusetts Tuberculosis Dispensaries and Their Relation to Practicing Physicians. J. S. Hitchcock, Northampton, Mass.—p. 225.
60 Year's Work of a Local Tuberculosis Hospital. A. C. Getchell, Worcester, Mass.—p. 229.
61 *Suggestion as to Prevention of Infantile Paralysis. W. S. Whittemore, Cambridge, Mass.—p. 231.
62 Pre-Operative Roentgenologic Examination in Cancer of Breast. J. W. Lane, Boston.—p. 232.
63 *Auricular Standstill: An Unusual Effect of Digitalis on the Heart, with Especial Reference to the Electrocardiogram. P. D. White, Boston.—p. 233.

54. **Reaction of Skin to Stroking.**—The phenomenon observed and here reported of the normal reaction of the skin to mechanical irritation produced by stroking with a wooden instrument, and consisting of vasodilatation, brief in duration, followed by vasoconstriction, long lasting, Tracy holds is caused by a double nerve mechanism, one for vasodilatation (automatic) and one for vasoconstriction (sympathetic); together with at least two hormones in the blood stream, the hormone X (Eppinger and Hess' "Autonomym") activating the vasodilatation mechanism; the other hormone, epinephrin (or analogue, inciters of sympathetic nerve endings), activating the vasoconstriction nerve mechanism.

56. **Treatment of Hay-Fever.**—The bacteria found in the secretions of the nose and eyes of hay-fever patients previous to their attacks and during their supposed healthy condition are markedly suggestive of the important rôle played by such bacteria in this disease. The presence of the bacteria and their products, Medalia believes is the determining factor between individuals being susceptible to hay-fever or not, since they may be, in a measure, responsible for the breaking up of the pollen, setting free the albumins and thus causing pollenosis.

The bacteria infection, although secondary to pollenosis, is apparently responsible for the difference between pollenosis, producing a mere transient sneezing, or true hay-fever attacks with all their accompanying symptoms. The good results obtained by the use of autogenous vaccines still further suggest the important relation of bacteria to this disease. The mechanism underlying pollenosis, with its accompanying anaphylactic symptoms, is still an open question.

The recent developments in the physical mechanism of anaphylaxis can be applied to this disease. The antiferments being absorbed by the liberated pollen albumins, the symptoms are then produced by the free ferments, which are normally present in the system, but unable to produce toxic symptoms because of the action of the antiferments. These free ferments produce the anaphylatoxins, and they in turn produce the anaphylactic symptoms of hay-fever, which resemble so closely anaphylaxis due to other sources. The underlying reason for the success of the treatment with autogenous vaccine in this disease is due to the fact that the infection is due, in practically all the cases to the staphylococcus group of organisms.

61. **Prevention of Infantile Paralysis.**—About a year ago, Hektoen and Rappaport published a report on the use of kaolin to remove bacteria from the nose and throat. For the past year, Whittemore has been using kaolin powder as a routine in the treatment of nose and throat infections. It apparently cleared up these infections very promptly, and, moreover, was not irritating, but distinctly soothing in its effects. He sprays it on the mucous membrane of the throat by means of the powder blower. He urges the use of kaolin as a prophylactic measure in the case of every child or adult who has come in contact with any possible source of infection with infantile paralysis.

63. **Auricular Standstill.**—Three cases of heart disease are described by White in which electrocardiographic evidence of auricular activity was abolished by digitalis. As soon as the effects of the digitalis had worn off, the auricular deflections reappeared. This is a rare result of digitalis administration.

California State Journal of Medicine, San Francisco

August, XIV, No. 8

64 Passing of the Bone Plate. P. S. Campiche, San Francisco.—p. 310.
65 Contracture of Vesical Neck; Diagnosis and Treatment. A. B. Cecil, Los Angeles.—p. 311.
66 Congenital Pyloric Stenosis. A. Weeks, San Francisco.—p. 317.
67 Preliminary Tests of Blood in Transfusions. S. H. Hurwitz, San Francisco.—p. 318.
68 *Leukopenia, Its Relation to Bronchitis. J. H. Catton, San Francisco.—p. 320.
69 Prospects of Surgical Treatment in Meningitis. H. C. Naffziger, San Francisco.—p. 322.
70 Treatment of Diphtheria. G. E. Ebright, San Francisco.—p. 324.
71 Psychogenic Factors in Organic Diseases. C. W. Mack, Livermore, Calif.—p. 325.
72 New San Francisco Hospital. R. G. Broderick, San Francisco.—p. 331.
73 Epidemic Cerebrospinal Meningitis. W. B. Smith, Los Angeles.—p. 333.

68. **Leukopenia, Its Relation to Bronchitis.**—A careful consideration of the infectious etiology of bronchitis prompts Catton to suggest the division of infectious bronchitides into elective and nonelective types: and, after a study of the leukocyte pictures in the infections which are associated with the elective type of bronchitis—the suggestion is offered that there is a definite relation between this affection on the one hand and a disturbed leukocyte balance; i. e., a tendency toward decrease in the number of granular cells and increase in the number of hyaline ones. Elective infection of the bronchi may occur in measles, malaria, influenza, pertussis, typhoid and tuberculosis; and, less frequently in German measles, smallpox, typhus, syphilis and scarlet fever. A reduction absolute or relative in the number of polynuclear leukocytes is characteristic of the above infections excepting smallpox and scarlet fever. A reduction absolute or relative in the number of polynuclear leukocytes may occur under certain conditions in smallpox and scarlet fever.

Delaware State Medical Journal

April, VII, No. 5

74 Uterine Fibroids. H. J. Stubbs, Wilmington, Del.—p. 2.
75 Giant Renal Calculus. J. A. Draper, Wilmington, Del.—p. 5.

Georgia Medical Association Journal, Augusta

August, VI, No. 4

76 Cystoscope As An Aid to Diagnosis. E. P. Merritt, Atlanta, Ga.—p. 65.
77 Practical Cystoscopy. A. L. Fowler, Atlanta, Ga.—p. 66.

Medical Record, New York

August 19, XC, 2389

78 Dogmatic Physiology. J. A. Gilbert, Portland, Ore.—p. 311.
79 Recent Medical Observations in European War Zone. J. A. Nydegger.—p. 318.
80 Bonime's Modification of Koch's Treatment of Tuberculosis. R. C. Newton, Montclair, N. J.—p. 320.
81 Relation of Tuberculosis of Bronchial Glands to the Diagnosis of Tuberculosis of the Lungs. M. E. Lapham, Highlands, N. C.—p. 324.
82 New Method of Extirpation of the Lacrymal Sac Without Resultant Scar. J. A. Kearney, New York.—p. 326.
83 Control of the Next Epidemic of Infantile Paralysis. F. Robbins, New York.—p. 328.
84 Epidemic Poliomyelitis. H. B. Sheffield, New York.—p. 330.
85 The Rice Diet; How to Prepare and Eat It. H. S. Bartholomew, New York.—p. 331.

Military Surgeon, Washington

August, XXXIX, No. 2

86 Some Medical Department Problems of Over-Seas Garrisons. R. G. Ebert, U. S. Army.—p. 111.
87 Experiences and Lessons of War Service in Serbia. W. A. Jolley, N. G. Colo.—p. 120.
88 Experiences at Red Cross Auxiliary Naval Hospital of Hamburg, Germany, During First Eight Months of Present War. H. G. Beyer, U. S. Navy.—p. 134.
89 Preparing Medical Reserve Corps of Army. L. D. Frescoln, U. S. Army.—p. 146.
90 Duties of Medical Supply Officers and Their Methods. (To be continued.) H. I. Raymond and E. P. Wolfe, U. S. Army.—p. 150.
91 Laying Out Field Hospital. W. W. Reno, U. S. Army.—p. 156.

Modern Hospital, St. Louis

August, VII, No. 2

92 Systematic Health Service for Employees. L. K. Frankel, New York.—p. 87.
93 Present Scope of Welfare Work in Iron and Steel Industry. T. Darlington, New York.—p. 91.
94 Provision for Medical Care Under Health Insurance. A. Lambert, New York.—p. 95.
95 Illinois Central Railroad Opens New Hospital. R. E. Schmidt, Chicago.—p. 98.
96 Industrial Welfare Work Factor in Modern Management. J. M. Eaton, Detroit.—p. 104.
97 Youngstown Sheet and Tube Company's Hospital. R. J. Kaylor, Youngstown, Ohio.—p. 109.
98 Cloak, Suit, Skirt, Dress and Waist Industries. G. M. Price, New York.—p. 111.

99 Welfare and Efficiency Achieved at Same Time. W. H. Walsh, Boston.—p. 115.
100 Locking Beyond Door of Welfare Service in Department Store. A. K. Walker, New York.—p. 119.

Philippine Journal of Science, Manila

January, XI, No. 1

101 *Preservation of Human Serum for Wassermann Reaction. E. H. Ruediger.—p. 1.
102 Case of Infestation With Dipylidium Caninum. M. P. Mandoza-Guazon.—p. 19.
103 Hemolysis by Human Serum. E. R. Ruediger.—p. 33.
104 *Experimental Study on Use of Apomorphin to Remove Foreign Bodies from Respiratory Passages. D. de la Paz and F. Garcia. —p. 51.

101. Preservation of Human Serum. — Formaldehyd, Ruediger says, is not a suitable preservative for serum intended for the Wassermann reaction. Serums that gave moderately positive results before liquor formaldehydi was added gave negative results, or nearly negative results, a week after the liquor formaldehydi had been added. Glycerin kept the serums sterile and did not noticeably influence the Wassermann reaction or the Tschernogubow modification of the Wassermann reaction. Unheated, old serums were strongly anticomplementary. Fresh serums that were heated to 55 C. for thirty minutes before they were mixed with glycerin did not become anticomplementary in eleven days. Fresh serums that were heated to 55 C. after they had been mixed with glycerin were anticomplementary on the eleventh day after the heating. Nearly all unheated serums that were mixed with glycerin and were kept at room temperature became permanently anticomplementary. Anticomplementary serums could be tested provided the amboceptor was increased. The anticomplementary property did not alter the result obtained with the Wassermann reaction or with the Tschernogubow modification of the Wassermann reaction. A mixture of equal parts of glycerin and serum was slightly anticomplementary as compared with the serum alone.

104. Apomorphin to Remove Foreign Bodies from Bronchi. —The results reported by the authors point conclusively to the impossibility of removing foreign bodies from the trachea by the use of apomorphin. It seems, moreover, that a foreign body in the respiratory passages below the larynx may, in reality, be driven farther in during the early stage of vomiting because of the descent of the diaphragm and closure of the glottis, which in turn give rise to the rarefaction of the air in the thoracic cavity and a rushing of the air into the deeper portion of the lungs. When tenacious mucous plugs are present in the bronchioles, this may be more than counterbalanced by the stimulating effect of apomorphin on the secretion and peristalsis of the bronchioles, which may loosen and facilitate the expectoration of plugs after vomiting.

Tennessee State Medical Association Journal, Nashville

August, IX, No. 4

105 Significance of Retinal Changes in Cardiorenal-Vascular Disease. F. P. Calhoun, Atlanta, Ga.—p. 151.
106 Retrodisplacements of Uterus: Indications and Contraindications for Employment of Pessary, Barrett, and Baldy-Webster Operations. W. T. Black, Memphis.—p. 155.
107 Tumors of Female Breast. J. L. McGehee, Memphis.—p. 160.
108 Production of Sexual Sterility from a Gynecologic Standpoint. G. R. West.—p. 166.
109 Fourteen Cases of Trachoma or Granular Lids Treated with Bacillus Bulgaricus. J. P. Crawford, Nashville.—p. 170.
110 Plea for Better Prophylactic Measures for Prevention of Specific Infectious Diseases of Childhood. J. T. Moore, Algood, Tenn. —p. 177.
111 Report of Two Gunshot Cases. W. F. Clary, Memphis.—p. 179.

Texas State Journal of Medicine, Fort Worth

August, XII, No. 4

112 Pellagra. K. H. Beall, Fort Worth, Tex.—p. 170.
113 Some Views on Oxidase Activity in Pellagra. G. D. Fairbanks, Brownsville, Tex.—p. 173.
114 Some Thoughts on Pellagra. I. L. Van Zandt, Fort Worth, Tex. —p. 175.
115 Epidemiology of Pellagra. E. M. Parrish, Dallas, Tex.—p. 177.
116 Food in Health and Disease: Some Recent Advances in Our Knowledge. C. Lovelace, Waco, Tex.—p. 180.
117 Typhus Fever: Prevention and Control. C. C. Pierce, San Francisco.—p. 182.
118 Endemic Typhus Fever in South Texas. H. L. McNeil, Galveston, Tex.—p. 188.
119 Blood Vessel Suture; Report of Cases. C. H. Harris, Fort Worth, Tex.—p. 191.
120 Local Anesthesia. A. Jacoby, Dallas, Tex.—p. 194.
121 Increasing Usefulness of Nerve Blocking or Regional Anesthesia. A. O. Singleton, Galveston, Tex.—p. 195.

West Virginia Medical Journal, Huntington

August, XI, No. 2

122 Value of Morbidity and Vital Statistics. S. L. Jepson, Charleston, W. Va.—p. 37.
123 Bronchial Asthma. A. H. Griggs, Eccles, W. Va.—p. 40.
124 Our Schools for Nurses; Past and Future. J. M. Sites, Martinsburg, W. Va.—p. 59.

Wisconsin Medical Journal, Milwaukee

August, XV, No. 3

125 Management of Emergency Surgical Case. E. A. Smith, Milwaukee.—p. 69.
126 Deep Suppurations of Neck; Report of an Extraordinary Case. J. H. Fowler, Lancaster, Wis.—p. 74.
127 A Family with Interesting Eyes. W. N. Linn, Oshkosh, Wis.—p. 79.
128 Goiter. J. K. Chorlog, Madison.—p. 80.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

July 29, II, No. 2900

1 *Two Hundred Consecutive Hysterectomies for Fibroids Attended with Recovery. J. Bland-Sutton.—p. 133.
2 Trench Fever. T. S. Wright.—p. 136.
3 Pathogenicity of Giardia (Lambia) Intestinalis to Men and Experimental Animals. H. B. Fantham and A. Porter.—p. 139.
4 Bacillary Dysentery (Shiga) Contracted in England. P. L. Sutherland.—p. 142.
5 The Curve of An Epidemic. J. Brownlee.—p. 142.
6 Importance of Technical Details in the Preparation of a Transparent Blood-Agar for the Cultivation of the Meningococcus. D. J. Lloyd.—p. 143.
7 Duration of Bilharziosis in South Africa. F. G. Cawston.—p. 144.

August 5, No. 2901

8 Disabilities of the Knee-Joint. R. Jones.—p. 169.
9 Treatment of Gas Gangrene by Intravenous Injection of Hypochlorous Acid. J. Fraser and H. J. Bates.—p. 172.
10 Convalescent Paratyphoidal and Dysenteric Cases From the Preventive Standpoint. I. W. Hall, D. C. Adam and R. E. Savage. —p. 174.
11 *Treatment of Scabies by Sulphur Vapor. J. Bruce and S. Hodgson.—p. 177.
12 Economical Use of Solutions of Costly Alkaloids for Ophthalmic Purposes. N. B. Harman.—p. 178.

1. Hysterectomy for Fibroids.—Time, says Bland-Sutton, has amply vindicated the surgical treatment of uterine fibroids by proving that no physiologic evil attends the loss of the uterus. Coincident with this improvement in the mortality rate there has been a marked diminution in the sequelae. Among the 200 hysterectomies reported, 188 were subtotal. Hysterectomy has been performed for adenomyoma, fibrosis uteri, cancer, and septic infection, during the period covered by the 200 cases of fibroids the subject of this report. All the patients recovered, also three with ovarian fibroids and four abdominal myomectomies. These results have been obtained with a minimum use of antiseptics. The skin of the abdomen is painted with tincture of iodin an hour before operation. The cut surface of the cervical stump is swabbed with the tincture. Sterilized silk is used exclusively for ligatures and sutures. The surgeon, assistants, and nurses wear sterilized rubber gloves. After the closure of the cervical stump, the gloved hands are thoroughly rinsed with a solution of mercury perchlorid (1 in 5,000). The abdominal incision is then secured with sutures, and the line of the incision, as well as the adjacent skin, lightly painted with tincture of iodin. No dressings are used. The house surgeon submits all patients set down for operation to a systematic examination. Women with uterine fibroids who show signs of diabetes, exophthalmic goiter, cardiac disease, arterial sclerosis, and albuminuria are rarely submitted to hysterectomy. Bland-Sutton recommends to eschew textbook

descriptions of hysterectomy. He advises to learn the technic by assisting a surgeon of experience.

11. **Sulphur Vapor for Scabies.**—The method employed by Bruce and Hodgson is as follows: The patient is given a hot bath, allowed to soak for five minutes in the water, then is well rubbed with soap—either soft or ordinary yellow bar—and the skin scrubbed to open the burrows. The patient is then transferred to a cabinet constructed on the lines of a "home Turkish bath." A wet towel is applied around the neck to prevent escape of fumes, a sulphur candle placed in the corner of the box is lighted, and the door closed. An orderly must remain constantly in attendance so as to remove the patient at once should he show signs of faintness or develop any difficulty in breathing from escape of fumes. At the end of fifty minutes the lid is quickly removed, and the patient returns to the bathhouse, where he puts on clean and warm clothing. Sufficient air to keep the candle burning will find its way through the cracks around the floor. The authors have treated over 200 cases, and have had about 2 per cent. returns, and in these cases they think some article of clothing had escaped disinfection and thus reinfected the patient. The cases giving the best results were those which had not been under any other treatment. The great merit of the treatment is that cases can be returned to their unit on the same day as received and resume duty next day.

Journal of Obstetrics and Gynecology of British Empire, London

June-August, 1915, XXVII, Nos. 6, 7 and 8

13 Chronology of the Founders of the Obstetric Forceps (1580-1799). A. Doran.—p. 154.
14 Frequency of Puerperal Eclampsia in Trinidad; Analysis of 22 Consecutive Cases. R. Scheult.—p. 173.
15 Clinical Aspects of Double Uterus. M. Handfield-Jones.—p. 186.
16 *Case of Fatal Rupture of Bladder During Puerperium. F. M. Huxley.—p. 195.
17 Three Cases of Labor Obstructed by Ovarian Cyst. W. Salisbury.—p. 197.

16. **Bladder Rupture During Puerperium.**—On the ninth day while nursing her baby on the left arm, Huxley's patient made a sudden stretching movement of the right arm to pick up something from the floor. She was at once attacked with violent abdominal pain, collapse and vomiting. The patient looked extremely ill, the face was pale, the tongue dry and bright red, the extremities cold and clammy, temperature 102.2 F, pulse running. The abdomen was very markedly distended, symmetrical, and moved on respiration. It was neither very rigid nor very tender. There was dulness over the symphysis pubis and in the flanks, and the presence of free fluid was determined. The patient stated that she had passed no urine since the onset of the acute illness (about thirty hours), so was catheterized, 40 ounces of acid, somewhat offensive, urine being withdrawn. Catheterization was repeated at 8 a. m. the following morning, and 35 ounces of urine withdrawn. In spite of stimulant treatment the patient's condition became gradually worse, and she died early in the afternoon of the second day. On opening the abdomen an odor of urine was noticed and ⅔ pint of turbid urine and peritoneal exudate escaped. In the hypogastric region the bladder was adherent to the anterior abdominal wall, and the posterior part of its fundus adhered lightly to the anterior surface of the uterus. The whole bladder wall was very thin, the organ having obviously been in a state of considerable distention. At the summit of the fundus of the bladder was a horizontal slit 2½ inches in length, through which the urine had escaped. The edges of the slit were jagged and sharp and showed no signs of sloughing nor of bruising. Signs of general peritonitis were present.

Lancet, London

July 29, II, No. 4848

18 *Laparotomy for Gunshot Wounds of Abdomen. G. H. Stevenson and C. Mackenzie.—p. 173.
19 Advantage of Using a Broth Containing Trypsin in Making Blood Cultures. S. R. Douglas and L. Colebrook.—p. 180.
20 Treatment of Carriers of Amebic Dysentery: Use of Double Iodid of Emetin and Bismuth. H. H. Dale.—p. 183.
21 Necessity for Prolonged Treatment in Cases of Infantile Paralysis. F. Hernaman-Johnson.—p. 185.
22 Six Cases of Wounds of Buttock with Perforation of Intestine. R. B. Blair.—p. 186.
23 Serious Defect in Some Registered Hospitals for Insane. H. Rayner.—p. 196.

August 5, No. 4849

24 *Serum Reactions of 300 Unselected Cases of Enteric Fever. E. Glynn and E. C. Lowe.—p. 222.
25 Acute Intestinal Obstruction. G. F. Aldons.—p. 227.
26 *Immobility After Joint Injury. J. Collie.—p. 228.
27 Extraction of Bullet From Middle Mediastinum. L. E. Barrington-Ward.—p. 230.
28 Cessation of Tachycardia on Outbreak of Spontaneous Perspiration. T. Oliver.—p. 231.

18. **Laparotomies for Gunshot Wounds of Abdomen.**—Stevenson and Mackenzie give the results of fifty laparotomies on gunshot wounds of the abdomen performed at a casualty clearing station, about 5½ miles from the nearest front line trenches. Many of the patients were operated on within five or six hours of their being wounded; many others, however, did not reach the station for twelve to twenty-four hours. The technic of the operation done differed little from that in the similar operation of civil practice. As a general rule, morphia and atropin are administered hypodermically before operation. They do not usually give saline beforehand, relying on subcutaneous and intravenous injection during and after the operation. The "iodin" method is used for the preparation of the skin, except in those cases where the wounds involve a large area, when, after anesthetization, the patients are prepared with some phenol preparation, usually lysol. They invariably endeavor to excise completely both the entrance and exit wound, using, of course, a different set of instruments from those employed in the actual laparotomy. Warm ether is the anesthetic used most frequently. Patients are operated on as quickly as possible. The abdomen is usually opened either in or near the middle line. The wounds in the intestine are sewn up with fine thread in two layers. End-to-end anastomosis is the usual method employed when resection is necessary, except in those cases where several feet of intestine have to be removed, when lateral anastomosis is employed. Wounds of the liver and spleen are usually packed; occasionally it is possible to suture them. In those cases where the kidney is badly pulped, complete removal is indicated; in those where the wound is slight the kidney may apparently be left without much danger, and urinary fistulae usually heal up quite well. The intestine is carefully washed with saline while outside the abdominal wound, and all fecal material and doubtful lymph gently sponged off. The abdominal cavity is also thoroughly washed out with saline or hypochlorous acid and mopped dry. Some cases seem to benefit from a quantity of saline being left in the peritoneal cavity. In grossly infected cases they have also tried the injection of ether into the peritoneal cavity. In their opinion the shock produced does not warrant a continuance of this procedure, although it has given good results in cases where the infection has been localized, as in appendix cases. Large drainage tubes are inserted into the pelvis, and the flanks as well if the cavity is badly infected. The abdominal wound is stitched in layers. During the operation continuous saline is given by means of Lane's bags, and frequently an intravenous infusion is given in addition. The results give a recovery rate of 34 per cent.

24. **Serum Reactions to Typhoid.**—The serum reactions to typhoid, paratyphoid A, and paratyphoid B of 300 consecutive recently convalescent "enterics" were tested by Glynn and Lowe by Dreyer's technic. After making about 3,000 tests of these and other cases they find the emulsions most satisfactory. Control sera of soldiers inoculated against typhoid, but suffering from dysentery or surgical diseases, failed to agglutinate either paratyphoid emulsions, but the serum of every convalescent, twelve in all, excreting paratyphoid A or paratyphoid B bacilli agglutinated the corresponding emulsion only in titres ranging from 25 to 250. One hundred and ten, or 37 per cent., of the cases tested agglutinated paratyphoid emulsion; 36 agglutinated paratyphoid A (titer from 25 to 250) and 74 paratyphoid B (titer from 25 to 2,500). Twenty-eight cases—i. e., 9.3 per cent.—failed to agglutinate typhoid, paratyphoid A, or paratyphoid B 1-25 when tested

about seven weeks after the onset of convalescence; all but 2 had been inoculated against typhoid. One hundred and sixty-two cases agglutinated typhoid alone, and were examined on the average eight weeks after the onset of convalescence. Of 153 examined at least twice 11 showed a marked fall or rise in titer, demonstrating that almost all, if not all, had a recent typhoid infection. The diagnosis as "enteric" of cases not suffering from these diseases vitiates treatment and discredits prophylactic vaccination, while those who recover are regarded as potential bacillary carriers, and prevented from returning to active service for months. The authors believe that the prophylactic use of mixed paratyphoid vaccines will undoubtedly increase the difficulty of diagnosing paratyphoid, as typhoid vaccine has done in the case of typhoid. The difficulty will be greater in those mild cases which occur, especially in the partly protected, where the infecting bacteria cannot be demonstrated.

26. **Immobility After Joint Injury.**—Collie advises against immobilization of a joint following injury because it is inevitably followed by adhesions, and the longer adhesions are allowed to remain the greater the risk is of permanently impaired function. When adhesions have to be broken down an anesthetic should always be given, not so much for the purpose of avoiding pain as of ensuring the complete relaxation of the muscles, otherwise the muscles which will be involuntarily brought into action may be injured by the force necessary to break down the adhesions. Sufficient muscular relaxation cannot be obtained by nitrous oxid gas. Pain which follows the operation is insignificant and seldom lasts more than an hour. Prior to the necessary passive movements of the joint, which should be commenced within a few hours of the operation, the muscle in the neighborhood of the joint should be skilfully massaged. It must never be bandaged, and to apply a splint is folly. If the joint is not manipulated within twenty-four hours the ruptured adhesions will be reunited. The secret of success in all these cases is to give the muscle very light work at first. A few days of such treatment will generally suffice to bring the remainder, and to get rid of any pain which the earlier efforts may have caused. When this has been accomplished the muscle may be exercised more freely.

Archives des Maladies du Cœur, etc., Paris

July, IX, No. 7, pp. 285-332

29 Aneurysm Complicating Tuberculous Cavity in Lung. (L'anévrysme de Rasmussen.) M. Letulle.—p. 285.
30 *Pathogenesis of Certain Cases of Flint's Cardiac Murmur in Aortic Insufficiency. C. Pezzi.—p. 290.

30. **Pathogenesis of Flint's Cardiac Murmur.**—Pezzi comments on the practical importance of being able to exclude an organic mitral stenosis accompanying aortic insufficiency. In the presence of a presystolic sound difficult to interpret properly, a typical cardiogram, which can easily be taken with the patient lying on the left side, will decide the question in the majority of cases. The discovery of gallop rhythm supplies an additional element for the prognosis, with special therapeutic indications. The Flint murmur is usually a presystolic bruit, symptomatic of gallop rhythm and with the same pathogenesis as the latter. The sound is scarcely a "murmur"; the French call it a *roulement*, a rumbling.

Bulletin de l'Académie de Médecine, Paris

July 18, LXXVI, No. 29, pp. 35-64

31 Necessity for Adding Open Tuberculosis to List of Notifiable Diseases. (Sur quelques lacunes des règlements d'hygiène à Paris.) R. Wurtz.—p. 39.
32 Virilism and Inversion of Sexual Characteristics Under Dependence of Interstitial Genital Glands. R. Blanchard.—p. 47.
33 *Local Anesthesia for Operations in the Chest. Couteaud and Bellot.—p. 60.
34 Contagious Diseases in Army Corps in 1915 Only a Third of Average in Peace Times. (Marche des maladies contagieuses dans un corps d'armée sur le front en 1915.) M. Boigey.—p. 62.

33. **Local Anesthesia for Operations on the Chest.**—Couteaud and Bellot have extracted a projectile from the lungs under local anesthesia in thirty cases, and expatiate on the ease and simplicity with which it can be done. It affords better control of pneumothorax, while reducing the operative shock and disturbance to the minimum. They had no accidents nor mishaps in any of their thirty cases. They flood the field of operation with a weak antiseptic solution, resect ribs and gain access to the lung without dread of operative pneumothorax. The wounds were of some standing and the projectile was causing more or less disturbance. In eight of the cases the lung was nearly or quite free from adhesions; the projectile was extracted after hooking the lung and bringing it up to the surface and fastening it there.

Le Nourrisson, Paris

July, IV, No. 4, pp. 193-256

35 Milk Sterilized by Heat in Infant Feeding. (Résultats de l'emploi du lait stérilisé par la chaleur dans l'allaitement artificiel.) A. B. Marfan.—p. 193.
36 *The Prognosis of Tuberculosis in Infants. Combe.—p. 202.
37 Importance of Mineral Elements in Infant Nutrition. (Rôle de la substance minérale dans la nutrition normale et pathologique du nourrisson.) H. Dorlencourt and M. Delort.—p. 211.

36. **Prognosis of Tuberculosis in Infants.**—Combe says that, while the prognosis is always serious, yet tuberculosis in an infant is not inevitably fatal. The outcome depends on the age when infection occurred, the virulence of the infection and the number of opportunities for reinfection, also on the extension and clinical behavior of the lesion. If a series of repeated applications of Mantoux' intradermal tuberculin test every two weeks shows that the reaction is growing less each time until it finally dies out altogether, this indicates that the lesion is not producing so much tuberculin as before or else that the body is producing enough antibodies to digest it. In either contingency, this Mantoux immunity, as he calls it, may be accepted as a sign of good omen. Necropsies show, however, that the tuberculous lesions in infants are always more extensive and more serious than would be surmised from the clinical examination. As long as the tuberculosis is restricted to the glands, the disease may progress very slowly or the child may recover. But when the gland barrier is broken down, the disease may run its course in a few weeks if the bronchi and lungs become involved, or cheesy pneumonia may drag along for months. There is also a very slow form of the disease, developing in the hilus or mesentery, *tabes hilaire* or *mésaraique*, in which the progressive cachexia may not prove fatal for two or three years. In the surgical forms the infection develops so slowly that antibodies are produced in progressive amounts, and this autotuberculinization may result in complete immunity and clinical recovery. He has had numbers of such cases. If this autotuberculinization has occurred before birth or through the milk, before infection becomes installed, the bacilli are unable to produce their usual lesions. They may live for years in apparently harmless symbiosis so long as this balance is not upset.

Lyon Chirurgical, Lyons

May-June, XIII, No. 3, pp. 405-536

38 *The Healing Process in Open Wounds of the Skull. (Le processus de cicatrisation des plaies ouvertes du cerveau.) L. Bériel.—p. 405.
39 *The Cell Findings with Lumbar Puncture After Wounds of the Skull. (Note sur les renseignements cytologiques donnés par la ponction lombaire au cours de l'évolution des blessures du crâne.) L. Lévy.—p. 428.
40 Prognosis of Traumatic Aphasia Consecutive to War Wounds of the Skull. J. Froment.—p. 434.
41 Pathogenesis and Treatment of Early and Persisting Hernia of the Brain. (Fungus du cerveau.) R. Leriche.—p. 448.
42 Macroscopic Lesions of War Wounds of the Spine and Spinal Cord. A. Latarjet.—p. 472.
43 Functional Value of Nerves in Cicatrix. (Note pour servir à l'étude de la valeur fonctionelle des cicatrices des nerfs. Recherche des courants dérivés au cours des interventions.) L. Bériel.—p. 500.
44 Device to Overcome Radial Paralysis. M. Goullioud.—p. 515.
45 *Liberation of Nerve Involved in Cicatrix. Neurolysis. E. Duroux.—p. 518.
46 *Protection of Trunk Nerves in Neurolysis. (De l'isolement et de la protection des troncs nerveux dans les opérations de restauration des nerfs.) P. Bonnet.—p. 529.

38. **The Healing Process in War Wounds of the Brain.**—Bériel's extensive experience with wounds exposing the brain has demonstrated the surprising fact that hernia of the brain

tissue is most liable to occur when the opening is small. The dread of hernia can be dismissed with ample trephining as the brain and the dura mater grow together in the healing process, and this symphysis is more complete the more ample the trephining operation. This growing together of the brain and dura mater is indispensable for survival. The later evolution of this symphysis seems to be a tendency to reabsorption of the cicatricial tissues and reconstitution of the meninges and their interspaces.

39. **Lumbar Puncture Findings During the Course of Skull Wounds.**—Lévy examined the cerebrospinal fluid at regular intervals in fifteen cases of war wounds exposing the brain, comparing the findings with the lesions found at necropsy after a long period of apparent convalescence. The first puncture was within a few hours of the injury. In every case the high tension and high albumin content of the fluid were accompanied at first by polynucleosis, but this yielded to lymphocytosis as the condition improved. This lymphocytosis persisted unmodified then, even when the case took a fatal turn. Necropsy disclosed that the meninges are capable of a defensive reaction amounting practically to a local cure. But they are not able to oppose an effective barrier to the infection and protect the subjacent nervous tissue. They retard but they cannot prevent the development of the encephalitis. This tolerance on the part of the meninges explains the lumbar puncture findings, and shows that they are not of much moment for the prognosis. The course in the fatal cases could be traced as, first, the meningeal inflammation, and then, as this retrogressed, development of secondary encephalitis below.

45. **Neurolysis.**—By this term Duroux says he means the "toilet" of the nerve bound down by cicatricial tissue, supplementing the liberation of the nerve with other measures as necessary. Paralysis from this incarceration of the nerve is more common among the wounded than paralysis from the nerve's being severed. The proportion of the latter in the French hospital seems to be only from 6 to 10 per cent. He describes the technic for freeing the nerve, remarking that success depends on the operation being done before the paralyzed muscles become atrophied as is the rule in two or three months. The outcome thus depends mainly on the condition of the muscles. The abolition of pain and return of sensibility may be counted on in practically every case, but the motor functioning is scarcely modified when the case is too old, or the technic of the neurolysis is defective, or the endeavor to be extremely conservative has been carried too far. Three typical cases are described, with illustrations showing the remarkable success that may be obtained when conditions are favorable.

46. **Protection of Liberated Nerve.**—Bonnet explains that when a nerve is released from a bed of cicatricial tissue the improvement noted at once is liable to decline as the neurolysis itself induces production of new cicatricial tissue, so that the last state is liable to be as bad as the first. In order to prevent this, the nerve must be protected, and he has found a sheath made from a graft of cellular tissue taken from the thigh best adapted for the purpose. He has sometimes utilized a sheet of fat tissue from the vicinity of the lesion, but has found it better to obtain the graft from some new field on the body, for reasons which he enumerates. Fat tissue not only protects but pads the nerve against new injury. The only inconveniences are from the thickness of the graft, which may render it awkward to manage, and the fact that, in the rare cases in which the fat tissue is not tolerated, exuding droplets of fat afford an excellent culture medium for germs. He has had slight infection of the focus in three cases from this cause. Tissue from the sac of a hernia answers better for neurolysis in some cases, but it does not "pad" the nerve like the fat tissue. He never drains for more than two or three days.

Paris Médical

July 29, VI, No. 31, pp. 85-100

47 Comparative Ergograph Research on Functional Disability of the Arm After Wounds of Bone or Joint. (Impotences fonctionnelles dues aux lésions osseuses et articulaires du membre supérieur.) H. Nepper and C. Vallée.—p. 86.

48 Working Artificial Hands. (Mains de travail pour amputés.) Boureau (Tours).—p. 92.

49 Professional Reeducation of Maimed Soldiers. M. Perrin.—p. 96.

Presse Médicale, Paris

July 24, XXIV, No. 41, pp. 321-328

50 *Differential Diagnosis of Pulmonary Tuberculosis and Chronic Nasal Affections. E. Rist.—p. 321.

51 *Treatment of Prolapse of the Uterus. A. Pascal.—p. 323.

50. **Differentiation of Pulmonary Tuberculosis from Cough Due to a Chronic Nasal Affection or Other Cause.**—Rist has encountered a number of cases of cough in which some other affection was mistaken for pulmonary tuberculosis. If scarcely any or no signs of a lesion are found in the lung and no bacilli can be detected in the sputum but there is a persisting cough, this may be traced to some heart or kidney trouble. Mitral stenosis, in particular, is liable to keep up a cough and induce hemoptysis, and there may be fever with the congestion of the lungs for which this valvular defect is responsible. Atony and sagging of the stomach also drag down the patient and may induce coughing. Roentgenoscopy clears up such cases and the wearing of a supporting belt brings improvement almost like magic. Rist adds that incomplete forms of exophthalmic goiter are frequently mistaken for tuberculosis at first. The cough in these cases is dry, fatiguing and very tenacious, and the loss of flesh, sweats, etc., easily lead into error unless the Graefe and Moebius signs are sought for and roentgenoscopy applied with bacteriologic examination.

Patients in the foregoing groups are mostly women; when a man has a persisting cough it is very liable to be the result of a chronic nasal affection. Few infirmities, he remarks, are so well tolerated as chronic nasal affections. He relates that a rhinologist was recently sent back from the front for supposed pulmonary tuberculosis when time proved his clinical freedom from tuberculosis of the lung but revealed that he had an unsuspected purulent nasal affection, long installed. The men do not seem to notice that a nostril is obstructed much of the time. They hawk in the morning and catch cold easily. There may be a cough-producing affection without interference with breathing. The lack of resonance in the nasal passages may modify the voice in a characteristic way, readily recognized when once heard. Varices may develop at the base of the tongue with tenacious nasal trouble, and simulate hemoptysis. Secondary bronchitis is frequent, and this may set up fever along with the cough, but negative roentgenoscopic and bacteriologic findings will exclude tuberculosis. Another source of possible error is that the defective breathing leaves part of the lung unventilated.

In most of these cases some lurking chronic sinusitis is responsible for the acute and recurring rhinitis and the descending infection of the air passages below. The general practitioner must realize that the nasal accessory cavities are frequently the seat of an infectious process whose effects may be felt throughout the bronchial apparatus. Removal of some hypertrophied turbinate or polyp or the cure of some chronic sinusitis abolishes at one stroke the cough and other disturbances. Even the rhinologists fail to realize that the cough and bronchitis are tributary to the sinusitis. Rist declares that many patients of this type are found in the sanatoriums for the tuberculous, and are cited among the "successes" under tuberculin. "It is easy to cure a man of tuberculosis when he has not got it."

51. **Prolapse of the Uterus.**—Pascal gives ten illustrations of the preferable technics for correction of prolapse in women of 40 and in the elderly. He emphasizes that whatever method is followed, the flabby muscles must be strengthened afterward by general hygiene and exercises to restore tone in them.

Revue de Chirurgie, Paris

March, XXXV, No. 3, pp. 337-479

52 *Paralysis of Peripheral Nerves After War Wounds. (Des paralysies des nerfs périphériques dans les blessures de guerre. Considérations opératoires—prognostic.) E. Duroux.—p. 337.

53 Tardy Extraction of Projectiles in the Lungs; Forty Cases. Technic for Surgery of the Lung. P. Duval.—p. 365.

84 *Primary Resection in Treatment of War Wounds of Joints With Fracture. (De la résection primitive dans le traitement des coups de feu articulaires avec fracture.) G. Cotte.—p. 385.

85 Extraction of Aseptic Projectiles in the Knee; Twenty-One Cases. (Extraction des projectiles aseptiques du genou.) G. Léo.—p. 421.

86 *The Supraclavicular Lymph Glands Connected With the Breast. (Etude anatomique des lymphatiques de la mamelle, au point de vue de l'extension lymphatique des cancers.) P. Mornard.—p. 462.

52. **Paralysis of Peripheral Nerves. Operative Treatment and Prognosis.**—Duroux discusses in turn paralysis from the severing of a nerve, from cicatricial "englobement," from neuromas, and from scraps of projectiles, as well as from compression by an aneurysm or fracture, with the best method of treating each. He cites typical examples, calling attention in particular to the fine results obtained in a case in which there was a gap of 15 cm. between the stumps of the median and ulnar nerves that had been cut with a knife, over six months before. The gaps were bridged with two strips of sciatic nerve from the dog, "transplanted with all their perineural cellular atmosphere" as he describes. Normal sensibility returned, and the vasomotor and trophic disturbances (blue hand, ulcerations) retrogressed but the man is still unable to bend his fingers quite normally although the wrist can be moved freely in all directions. All the evidence confirms the wisdom of restoring the continuity of the nerve, loosening it and bringing the stumps together. This can readily be done with a gap of only 2.5 cm. If necessary the nerve can be stretched a little or the limb flexed to relax the nerve. Success depends on not waiting too long.

In case the nerve is bound down by cicatricial tissue, the operation to relieve must deal not only with the cicatricial tissue in which the nerve is embedded but also with the cicatricial tissue within the nerve. He treats neuromas on the principle that they represent a contusion of the nerve, slitting them lengthwise to release the strangulated fibers, evacuate effusion and relieve the hypertension which is inevitable when in the focus of a contusion. Paralysis from compression by an aneurysm or callus after fracture may retrogress spontaneously, as the aneurysm is evacuated or the callus absorbed. He here describes instances of each with spontaneous complete recovery.

54. **Primary Resection in Treatment of Gunshot and Shell Wounds of Joints with Fracture.**—Cotte reports his experience in this line with the different large joints, discussing the indications and outcome for each in turn. It is evident from the forty-nine cases that total resection of the joint offers better conditions for use of the limb later, as this wards off or attenuates infectious processes, and permits early orthopedic treatment which is indispensable in restoring to the utmost the functioning of the wounded limb.

56. **The Lymphatics Connected with the Mammary Gland.**—Mornard injected a stain into each mammary gland in fifty cadavers of fetuses or young children, and gives fourteen colored illustrations of the five principal types of the chain of lymph glands running up into the supraclavicular fossa. His attention was called to the subject by the frequency of recurrence of cancer in this chain of glands. In only twelve of the fifty did the arrangement of the glands on both sides harmonize with the description in the textbooks. In 50 per cent. there were two pedicles.

Archiv für klinische Chirurgie, Berlin

CVII, 1915, No. 1, pp. 1-194. Last indexed Feb. 19, p. 602

57 *Generalized Fibrous Ostitis With Tumors and Cysts. (Von Recklinghausen'sche Knochenkrankheit, zugleich ein experimenteller Beitrag zur Aetiologie der Knochencysten.) F. Lotsch.—p. 1.

58 *War Wounds of the Brain and Their Surgical Treatment. (Verletzungen des Gehirns und deren chirurgische Behandlung.) W. B. Müller.—p. 138.

59 *Transplantation of Pectoralis Muscle to Correct Paralysis of the Shoulder Muscles; Two Cases. (Ueber Muskelüberpflanzungen am Schultergürtel.) M. Gerulanos.—p. 159.

60 Technic for Resection of the Stomach. (Nochmals zur Technik der Magenresektion.) H. Finsterer.—p. 180.

61 Technic for Resection of the Stomach. (Sachliche Berichtigung zu vorstehenden Bemerkungen Finsterer's.) H. v. Haberer.—p. 189.

57. **Generalized Fibrous Ostitis.**—Lotsch devotes fifty pages to detailed reports of thirty-seven cases on record of the generalized bone disease to which von Recklinghausen first called attention as "fibrous ostitis with tumors and cysts." Lotsch further reports a case from his own experience and discusses all phases of the affection in question. He says that we can accept it now as established that the morphologically evident primary process is a proliferating and destructive fibrous metamorphosis of the bone marrow. In other words, the normal fat marrow and the blood-producing marrow are crowded out by proliferation of the connective tissue stroma, a marrow fibrosis. Everything else, the changes in the bone, the tumors, the cavities from softening of bone tissue—all these are but secondary.

Pain is the first symptom, but it may be long retarded in children and the elderly, their bones yielding more readily. The pathologic fractures with this disease may occur with physiologic trauma. The periodic aggravations and remissions are likewise pathognomonic. The deformity of the bones may resemble that with Paget's disease of the bones. There are also many points of analogy and resemblance between this fibrous ostitis and puerperal osteomalacia. In twenty-eight of the cases on record the age is mentioned; each decade from birth to 40 is represented by from five to seven cases. In nineteen cases the discase had been manifest from four to twenty-four years before death, and in nine still surviving the duration has been from four to twenty years. In Lotsch's personal case the disease had commenced thirty-two years before.

Among the total thirty-seven cases all but nine were in girls and women. This predilection for the female sex is another point which distinguishes von Recklinghausen's from Paget's disease of the bones, and brings it nearer to true osteomalacia. Roentgen examination is the sovereign diagnostic measure. Treatment seems to be powerless to arrest the disease. The favorable outcome after resection of a solitary bone cyst cannot be anticipated in this generalized type. If enough bone shell is left after scraping out the diseased bone marrow, the cavity grows up fast owing to the regenerating power of the periosteum which does not seem to suffer in this disease. But, in the generalized form, it continues its ravages at other points. However, extreme painfulness or crippling may justify intervention at some point. Phosphorus, arsenic and calcium salts have never proved really successful. To give lime in rachitis seems reasonable, to supply the lime hunger of the newly formed bone. But with fibrous ostitis the lime is cast out of bones that previously contained it. Any intake of lime by the mouth would merely increase the amounts of lime being eliminated in the urine or it would pass through the intestines unabsorbed.

Syphilis has been suggested as an important factor in fibrous ostitis, but the Wassermann test was negative in the later cases—the only ones in which it was applied—and nothing suspicious of syphilis was found at necropsy in any of the cases examined postmortem. It is now probable that some upset in the balance of the internal secretions is responsible. No other supposition has proved tenable to date. In conclusion, Lotsch describes experiments on fifty-one tibias in twenty-six rabbits, aiming to induce the production of a cyst. The experiments were all failures, so far as this was concerned, but they demonstrate anew and beyond question that a hematoma in the marrow cavity, even after removal of most of the bone marrow, never seems to entail a cyst-like cavity. A purely traumatic origin for bone cysts must therefore be rejected. The article fills 137 pages and is profusely illustrated, with a bibliography of 157 titles.

58. **Wounds of the Brain.**—Müller advocates prompt and extensive operative intervention in all wounds of the brain, saying that a large proportion of the men that live to reach the hospital can thus be saved. The fear of meningitis should not deter from ample operative measures; every scrap of a projectile or bone splinter should be removed, and where a focus of softening or an abscess has already formed in the brain it should be drained. Among his twenty-five cases of tangential wounds, from a glancing projectile, there were

only two deaths. In one of the fatal cases the meningitis was far advanced when the man was brought in. The other fatal case emphasizes the importance of removing every splinter of bone as otherwise they may entail local softening of the brain. He says of the contrecoup that the impact on the other side of the skull may induce a patch of softening.

59. **Transplantation of a Muscle Flap in the Shoulder Girdle.**—Gerulanos is professor of surgery at Athens, and he here relates two cases of paralysis of the serratus muscle which he corrected by transplanting the pectoralis muscle. In the first case the paralysis was of traumatic origin, the injury occurring while felling a tree. The second patient was a young woman. The shoulder muscles on both sides had gradually become paralyzed and the transplanting had to be done on both sides. A substitute for the trapezius muscle was also provided by muscle tissue from the sacrolumbalis. Both cases are described in detail, with fourteen illustrations, to show the fine functional results attained, two and five years after operation. The woman was operated on at four sittings in the course of a year.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 22, XLVI, No. 30, pp. 929-960

62 A Study of Biologic Psychology. (Gefühl, Gesittung und Gehirn.) K. v. Monakow.—p. 929.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 20, XXXVII, No. 58, pp. 897-912

63 *Mercuric Chlorid in Treatment of Acute Articular Rheumatism. (Patogenesi e cura del reumatismo articolare acuto.) A. Fantoni.—p. 899.

July 23, No. 59, pp. 913-928

64 *Retrograde Dilatation of the Cardia in Case of Impassable Cicatricial Stenosis. A. Franchini.—p. 916.

63. **Mercury in Acute Rheumatism.**—Fantoni acknowledges the benefit from the salicylates in febrile articular rheumatism, but insists that this does not reach the root of the trouble, while the harm it often does may counterbalance the good. He presents considerable evidence to show that acute articular rheumatism is not a disease entity but a uniform manifestation resulting from a special mode of action of a number of pathogenic micro-organisms in given conditions of attenuated virulence and suitable organic environment. This assumption is confirmed by the number of micro-organisms which have been cultivated from cases of acute articular rheumatism, and by the fact that Ghedini obtained positive responses to deviation of complement tests made with the diplococcus, gonococcus, streptococcus and staphylococcus and the influenza bacillus, alone or associated. The test was positive for one or more of these germs in every case. Another fact substantiating the assumption is the effect of treatment. Maragliano asserts that the salicylates act exclusively on the temperature and the pain, and Fantoni reiterates that they do not shorten the course of the disease. The salicylates given even from the very first, do not abort the disease nor check its progress from one joint to another or to the endocardium. Their action is undoubtedly specific, he says, so far as it goes, but it does not go far enough; its action is incomplete.

The aim in treatment should be to inject directly into the blood some drug which confers on the serum bacteriolytic, antitoxic and agglutinating properties while increasing the number of mononuclear cells in the blood. The serum thus modified has a destructive action on whichever of the ordinary germs may find their way into the system. He says that the drug which will accomplish this transformation of the blood serum into a polyvalent vaccine, as it were, is mercuric chlorid in minute doses, from 1 to 5 mg. in the twenty-four hours. Intravenous injection of these small doses realizes a series of biologic effects which amount in the sum total to immunity. Mariani of Genoa has had the greatest experience in this line in Italy and his enthusiasm led Fantoni to apply this method of treatment in four cases which he describes in detail. In one case this was the fourth recurrence of the disease; the other attacks had lasted from thirty to forty-five days under the salicylates. Under the mercuric chlorid the patient soon showed marked improvement and was able to be up the tenth day, and there has been no tendency to recurrence since. His dose was 0.003 gm. on three successive days and 0.004 gm. on alternate days later, a total of six or seven of these intravenous injections. He says that this treatment is certainly harmless, and he did not hesitate to apply it even when the kidneys were a little below par. Of course serious kidney disease contraindicates it. He gives it by intravenous injection of 3 c.c. of a 1:1,000 solution of mercuric chlorid.

64. **Retrograde Dilatation of the Cardia.**—The patient was a man of 27 and except for rachitis and measles he had no pathologic history until the age of 20 when symptoms suggested a probable gastric ulcer. His condition then improved for a time but he had difficulty in passing the food into the stomach. He said it seemed to stick high up in the esophagus, and the sound felt an obstruction at two points, one quite low and the other high, the lower one becoming absolutely impassable in time. The stomach was opened at two sittings and the stenosis gradually dilated with flexible Beniqué sounds progressing from No. 1 to No. 30, curing the patient completely from all further trouble from this source. The fistula into the stomach was kept open for seven months. The retrospective diagnosis was cicatricial stenosis from an ulcer in the region of the cardia plus reflex spasmodic contraction of the esophagus higher up. The introduction of the larger sounds from below sometimes started reflex vomiting, but it stopped as soon as the instrument was removed. When No. 30 was reached in the series, the dilatation was continued by way of the mouth.

Policlinico, Rome

July 16, XXIII, No. 29, pp. 893-920

65 *Continuous Horizontal Bath for Wounded Leg. (Infezione settiche negli arti feriti e nuovo bagno in posizione orizzontale per combatterle.) G. Ingianni.—p. 893.

66 Primary Diplococcus Cerebrospinal Meningitis. T. Pontano.—p. 900.

67 Organization of the Roentgen Ray Service in the Field. (Appunti e considerazioni sulla radiologia da campo. Organizzazione generale dei servizi.) E. Grego.—p. 902.

July 23, No. 30, pp. 921-942

68 Localization of Projectile by Displacing Roentgen Tube Horizontally for Ten Centimeters. (Un facile metodo di localizzazione dei proiettili. Applicazione nuova di principi vecchi.) D. Bocciardo.—p. 921.

69 To Reduce the Amount of Mutilations. (Per limitare le mutilazioni.) T. Pontano.—p. 923.

70 *Legislation on Workmen's Compensation. (Per la moralizzazione della legge sugli infortuni del lavoro.) A. Ranelletti.—p. 926.

July, Medical Section No. 7, pp. 193-280. Guido Baccelli Number

71 Baccelli as Citizen and Teacher. A. Murri.—p. 193.

72 Baccelli as Clinician. E. Maragliano.—p. 217.

73 Baccelli as Statesman and Leader in Social Medicine. G. Sanarelli.—p. 263.

65. **Horisontal Bath for the Leg.**—Ingianni has been using for some months a light bathtub long enough and deep enough for the leg to rest in it as it enters at one end, the limb thus submerged from the toes to the hip as the man lies in bed. This permits a continuous laving of the wounds on the leg with some antiseptic fluid. He has been making a practice for a year of this system of continuous laving for the arm, and found the results so excellent that he has devised the horizontal bathtub on the same principle. The opening for the leg is made very large, with a waterproof cuff that fits tight enough around the leg to prevent leaking of the water but not tight enough to interfere with the circulation. The mattress below this point is cut out. The tub can be made of metal, glass or wood or be merely a portable frame for a rubber-cloth tub. Since he has adopted this principle in treating war wounds of the extremities he has not had to amputate either an arm or leg, even in 95 cases of frozen feet with more or less extensive gangrene; in seventeen cases of compound fracture of the bones of the leg from gunshot or shell injury with suppuration; sixty cases of compound fracture of the bones of the arm, and nineteen of the elbow. In the latter group amputation seemed inevitable as also in the cases of frozen feet. He has rings soldered to the inside of the bathtub at the foot to permit extension of the limb while it is in the continuous bath, weights and pulleys per-

mitting graduated traction. By keeping the limb soaking in the antiseptic fluid for five or six hours a day, or even twice this, enough of the antiseptic is absorbed to have a general action on the infection while the fluid permeates the remotest crevices of the wound, cleanses and sterilizes. In short, he declares, "the effect of this prolonged bath is marvelous." It does not interfere with the natural circulation in the least. The fluids he has been using for the continuous bath are a 3 per cent. solution of hypochlorite or a ½:1,000 solution of mercuric chlorid, a 1:1,000 solution of potassium permanganate, iodized water or physiologic solution. It is generally better to alternate the use of these antiseptics in turn; the mercuric chlorid always proved most effectual in the septic cases. The article is illustrated.

70. **Workmen's Compensation Legislation.** — Raneletti declares that the principle of compulsory treatment must be introduced into legislation on workmen's compensation. At present there is no authority to compel the injured to submit to proper treatment and complete the whole course. Precious time and opportunity are lost far too often. Only for workers in the sulphur mines does the law insist that the injured must obey the directions of the physicians connected with the works. If the victims of industrial accidents knew that they would forfeit their indemnity if they refuse to submit to and follow the doctor's directions, a new era would dawn for industrial accidents, and the compensation would acquire a just basis. He suggests another point which might be borne in mind in future legislation on disability, sickness and old age insurance, namely, that the old age pension should be increased or diminished according as the individual has made slight or considerable demands previously on the treasury.

Siglo Medico, Madrid

July 15, LXIII, No. 3266, pp. 449-464

74 Principles for General Anesthesia. (Advertencias utilisimas sobre la anestesia general.) D. C. Calleja.—p. 452.
75 *Constitutional Asthenia. S. de Santa Maria.—p. 458.
76 When Called in Consultation. (Las consultas medicas.) J. Allen. —p. 459. Commenced in No. 3265.

July 22, No. 3267, pp. 465-480

77 Microscopic Study of Red Blood Corpuscles. F. Mas y Magro.—p. 466. Conclusion follows.

75. **Constitutional Asthenia.**—Santa Maria has been studying the Becher-Lennhoff index of constitutional asthenia, and has found it very instructive. In examining over 500 persons, he found the index always above 67 in persons with other signs of constitutional asthenia, while it was always below this in the normal and the obese. To get this index the distance between the notch of the sternum and the pubis is divided by the waist measure and multiplied by 100. This reveals the basis of constitutional asthenia, and discloses that this is the soil on which a number of apparently widely diverse morbid conditions develop, from characteristic, typical gastroptosis and enteroptosis to tuberculosis, hyperchlorhydria, hypersecretion and perverted or deficient thyroid functioning. In England and Germany, where the average weight is higher, the index for constitutional asthenia averages higher than in Spain. It gives a much better insight into the subject's endurance and resisting powers, and hence his aptitude for military service, than the ratio between the chest measure and the height, which is used in Spain to eliminate the unfit in passing on recruits, and Santa Maria urges that this constitutional asthenia index should be substituted for the latter. This index is not modified by the height nor the state of nourishment. He found it typical for constitutional asthenia in 60 per cent. of all his tuberculous patients examined, and Leschke found an equally large percentage among the tuberculous soldiers last year.

Hospitalstidende, Copenhagen

July 19, LIX, No. 29, pp. 697-724

78 *The Skin Tuberculin Test in Prognosis of Tuberculosis in Children Under Two. (Om den prognostiske Betydning af positiv Pirquets Reaktion hos Børn fra 0-2 Aar.) G. E. Permin.—p. 697.
79 *Case of Persisting Arrhythmia Without Valvular Defect or Subjective Symptoms. (Udtalt Arteriefilmren — Arythmia perpetua — uden Klappefeil og uden Spor af subjektive Symptomer i 15 Aar. Ischias dextra.) C. Gram.—p. 707.

78. **The Skin Tuberculin Test as a Basis for Prognosis in Young Infants.**—Permin remarks that the various statistics that have been published on the subject of the skin tuberculin test applied to children less than 2 years old, have been obtained in a hospital or institutional environment, with few exceptions. This somewhat detracts from the reliability of the deductions as conditions in families differ from those in institutions. He has been studying the skin tuberculin reaction in the young children in the families of persons who apply to the two antituberculosis dispensaries at Copenhagen. It is the rule there to examine all the members of the families of applicants, and it has thus been possible to apply the Pirquet tuberculin test to infants under the age of 2. Forty-six gave a positive response and have all been followed to date over a number of months. Some older member of the family had pronounced tuberculosis, with opportunity for infecting the children, in all but three cases. This material is tabulated and analyzed, the conclusions being that only during the first year of life has the skin tuberculin reaction a particularly grave prognosis. Of the fifteen infants less than a year old, six died, but only two of the thirty-one between 1 and 2 years old. Many of the children who had been repeatedly and extensively exposed to infection seem to be thriving through quite a long period of observation. His statistics show further that the antituberculosis dispensaries, by training the tuberculous in greater care to prevent infection of others, are doing a great work, the results of which are manifest in the clinical recovery of many children who otherwise would have succumbed to wholesale infection.

79. **Persisting Arrhythmia Without Valvular Defect or Subjective Symptoms.**—Gram's patient is a working man of 44, always robust, with two healthy children. For fifteen years at least his pulse has been that of extreme and constant arrhythmia — arrhythmia perpetua — for which no explanation can be found. There is no trace of a valvular or myocardium affection, the blood pressure is normal, hemoglobin 104, and there is nothing to suggest that digitalis might be needed. During all this time he has been doing hard manual labor with much athletic work besides.

Ugeskrift for Læger, Copenhagen

July 13, LXXVIII, No. 28, pp. 1151-1196

80 *Treatment of Eclampsia. E. Hauch.—p. 1151.
81 Case of Optochin Amblyopia. (Et Tilfælde af Optochin-Amblyopia.) V. Scheel.—p. 1160.
82 Tuberculous Pericarditis With Effusion. Clinical Recovery Under Artificial Pneumopericardium. T. B. Hansen.—p. 1166.

80. **Eclampsia.**—Hauch reports 109 cases of eclampsia from the obstetric department of the Copenhagen Rigshospital. Convulsions had occurred before delivery in ninety-three but in sixteen had come on only after the child had been born. The mortality was 10 per cent. in the first of the above two groups, and 8 per cent. for the total 109 cases. He analyzes the cases to see if it could have been possible to determine which was going to have a more serious and which a lighter course, but could find nothing decisive. Hence it is imperative to treat every case, even the mildest, as if it were going to be a grave one. Only in this way can we ward off tragic surprises. His experience with the Stroganoff prophylactic method of treatment was not very encouraging, and he queries whether it is wise to add two more to the load of toxins the woman is already carrying. In any event, he thinks it is best to empty the uterus and thus get rid of what in all probability is the source of some of the toxins at least. Some of the women were reexamined a year or more afterward and several were found to suffer from occasional dizziness, headache and disturbances in vision. These later effects were encountered even in some of the supposedly lighter cases. Of the sixty-eight children weighing over 2,000 gm., 10 per cent. died, and 44 per cent. of those weighing less than this, in addition to the five abortions and six stillborn children. Only transient benefit was realized from venesection in the cases in which he applied it before delivery, but after delivery had been completed, venesection seemed to give permanent relief by getting rid of some of the toxins circulating in the system, after the source of the toxins had been expelled.